June 2, 1959 W. TENNYCK 2,889,135

PIPE PUSHING MACHINE

Filed April 15, 1955

2 Sheets-Sheet 1

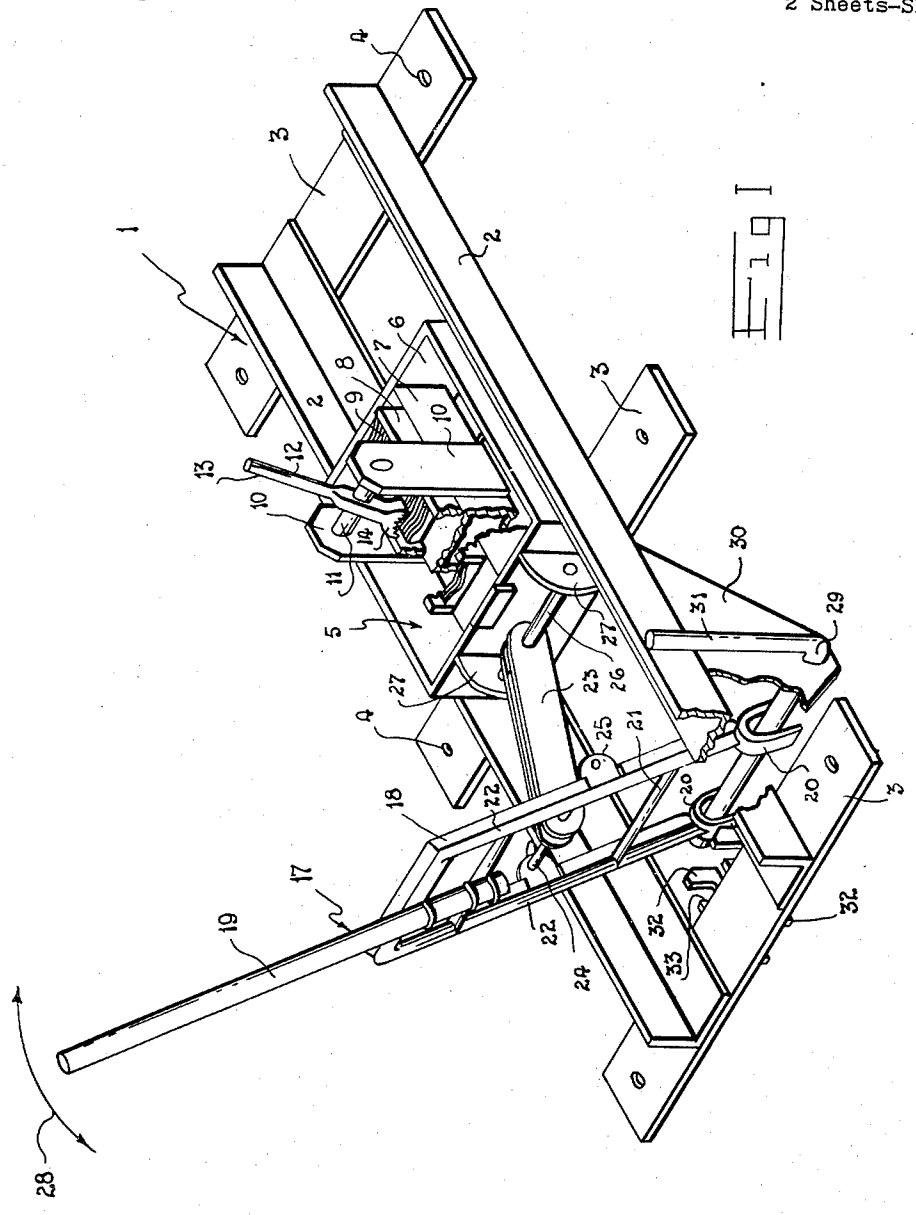


FIG 1

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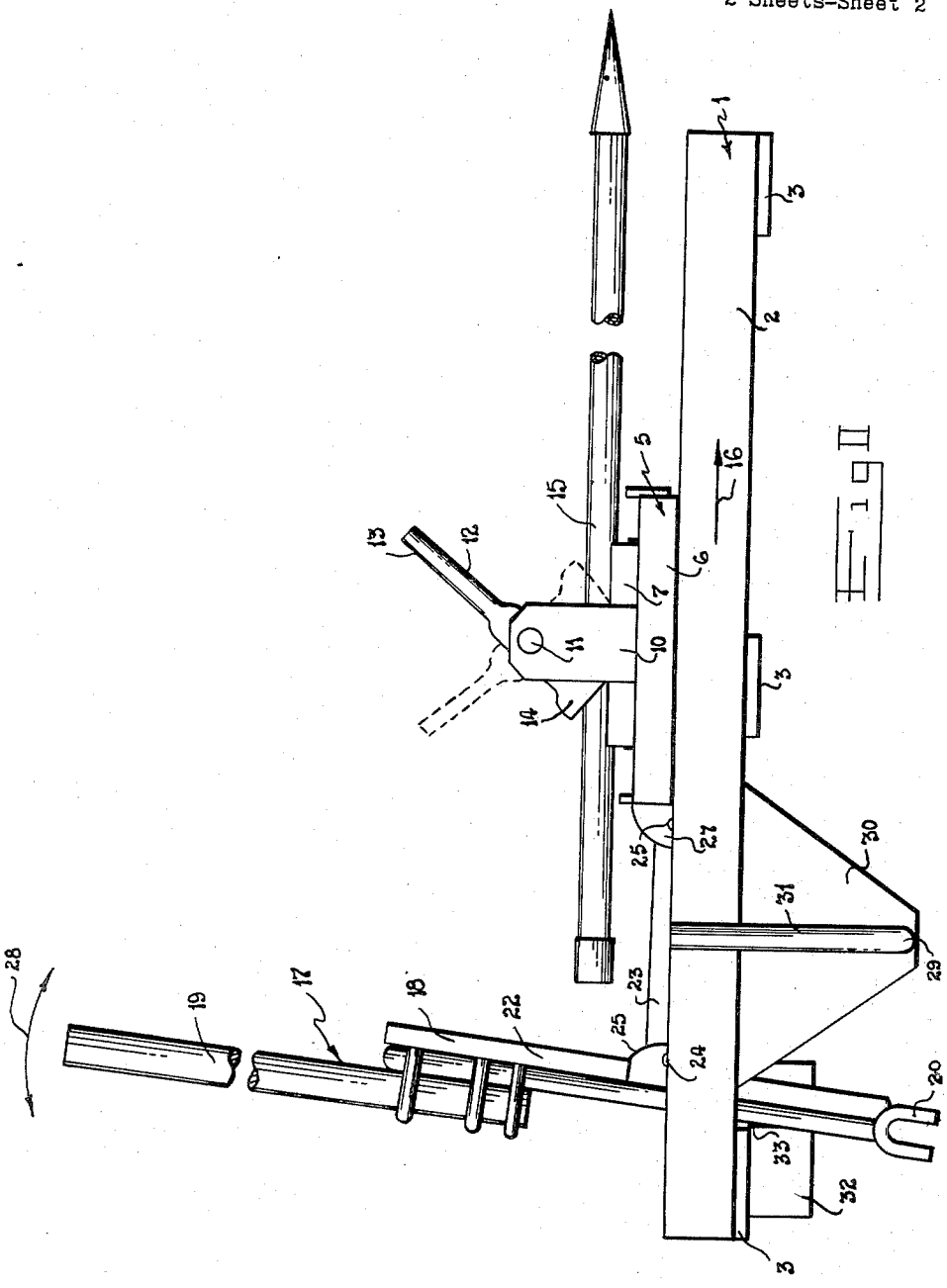


Fig. II

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United States Patent Office

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PIPE PUSHING MACHINE

Walter Tennyck, Winnipeg, Manitoba, Canada

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1 Claim. (Cl. 254—29)

My invention relates to new and useful improvements in pipe pushing machines, the principal object and essence of my invention being to provide a device of the character herewithin described in which the means for reciprocating the carriage can be pivoted to the base framework in two positions thereby altering the leverage between the means and the carriage.

A further object of my invention is to provide a device of the character herewithin described which, due to the construction of the base framework and the reciprocation of the carriage therein, enables directional control of the pipe being pushed.

Yet another object of my invention is to provide a device of the character herewithin described which includes means whereby the pipe can be pushed or pulled by means of a relatively minor adjustment.

A still further object of my invention is to provide a device of the character herewithin described which enables the device to be used in restricted positions.

Yet another object of my invention is to provide a device of the character herewithin described which is relatively simple in construction, economical in manufacture and otherwise well suited to the purpose for which it is designed.

With the foregoing objects in view, and such other objects and advantages as will become apparent to those skilled in the art to which this invention relates as this specification proceeds, my invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawings in which:

Figure 1 is a perspective view of my device with the handle means in one position.

Figure 2 is a side elevation of my device with the handle means in the alternative position and showing a length of pipe within the machine.

In the drawings like characters of reference indicate corresponding parts in the different figures.

Proceeding now to describe my invention in detail, it will be seen upon reference to the accompanying drawings that I have provided a substantially rectangular base framework collectively designated **1** which consists of a pair of inwardly facing angle iron runners **2** spanned by cross members **3**, it being understood that this framework can, if desired, be mounted upon timbered supports and secured thereto by bolts or nails through apertures **4** provided in the cross members **3**.

A carriage collectively designated **5** consists of a substantially rectangular boxing **6** carrying longitudinal blocks **7** upon which is mounted a lower pipe gripping jaw **8** being serrated as at **9**. Upstanding brackets **10** from the blocks **7** carry transverse pin **11** which in turn supports upper jaw **12** consisting of rod **13** and arcuately curved and serrated jaw member **14** upon the lower end thereof. Reference to Figure 2 will show the relationship between the jaws **9** and **14** between which a length of pipe **15** may be gripped.

The carriage **5** is adapted to fit between the angle irons **2** and to reciprocate therewithin and it will be appreciated that with the jaw **14** in the position shown in Figures 1 and 2, movement of the carriage along the base framework in the direction of arrow **16** will cause the jaws to grip the pipe and to move it in the same direction, thus forcing it through the earth structure immediately ahead of the machine.

Conversely, when the carriage is moved along the base framework in a direction opposite arrow **16**, the grip between the jaws and the pipe will be broken so that the pipe will remain stationary and the carriage move rearwardly with relation to the pipe in a position to grip the pipe again and thrust it further forwardly when the carriage once again is moved in the direction of arrow **16**.

It should also be noted at this point that if the upper jaw assembly **12** is tipped so that it lies approximately 90° from the position shown in Figures 1 and 2 (as shown in phantom in Figure 2) the action will be exactly opposite. In other words, the pipe will be withdrawn progressively by reciprocation of the carriage.

Means collectively designated **17** are provided to reciprocate the carriage **5** within the angle irons **2** and take the form of a substantially rectangular frame **18** having an operating handle **19** secured to and extending upwardly therefrom. These parts are defined as an operating component. This frame **18** is open and is provided with a pair of fork ends **20** on the lower ends thereof, together with a bar **21** spanning the side members **22** of the frame just above the fork ends **20**.

Links **23** engage a further rod **24** spanning lugs **25** on the side members **22**, said links extending forwardly to engage a rod **26** which spans lugs **27** secured to the rear end of the carriage **5** so that by pivoting the base of the handle assembly **17** to the base framework **1**, and reciprocating the handle in the direction of double-headed arrow **28**, the desired reciprocation of the carriage **5** is obtained.

However, it is desirable that different leverages be available for the operation of the carriage either due to the extreme hardness of the soil through which the pipe may be pushed or, alternatively, due to restricted space within which the machine is to be operated. These different leverages are obtained by providing alternative positions by which the frame **18** of the handle assembly may be pivoted to the base framework **1**.

In Figure 1 of the accompanying drawings, a transverse bar **29** spans a pair of plates **30** secured to and extending below the angle irons **2** of the base framework, the extremities **31** of this bar being turned upwardly and being secured as by welding to the sides of the angle irons as clearly shown in the drawings, thus making a relatively strong anchorage for the bar **29**. The aforementioned fork ends **20** engage freely over this bar between the plates **30** thus permitting a rocking action of the handle assembly with a relatively long stroke.

Secured to the underside of the rearmost transverse member **3** are a pair of slotted lugs **32** in spaced and parallel relationship, the slots **33** therein being open-ended upon the upper sides of these lugs. These lugs provide anchorage for the alternative position of the handle assembly whereby the aforementioned transverse rod **21** spanning the sides **22** of the frame of the handle assembly can be engaged within these slotted lugs after disengaging the fork ends **20** from the rod **29**, thus giving a shorter stroke than heretofore.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claim without departing from such

spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

What I claim as my invention is:

A device for pushing and pulling pipes through soil and the like comprising in combination a base framework, a carriage reciprocal upon said framework and pipe clamping jaws on said carriage, and an operating component operatively connected with said carriage adapted to reciprocate same within said framework, links pivotally connecting said operating component with said carriage, said component being operable in one of two positions, said positions varying the leverage action between said component and said carriage, means to pivot said component selectively upon said framework, in either one of said two positions, said means to pivot said component including a rod spanning said component, fork ends upon the lower end of said component, a bar spanning said base framework, and lugs formed on said base framework to the rear of said bar, said fork ends engaging said bar for actuating said device in one of said two positions, said rod engaging said lugs for actuating said device in the other of said two positions.

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