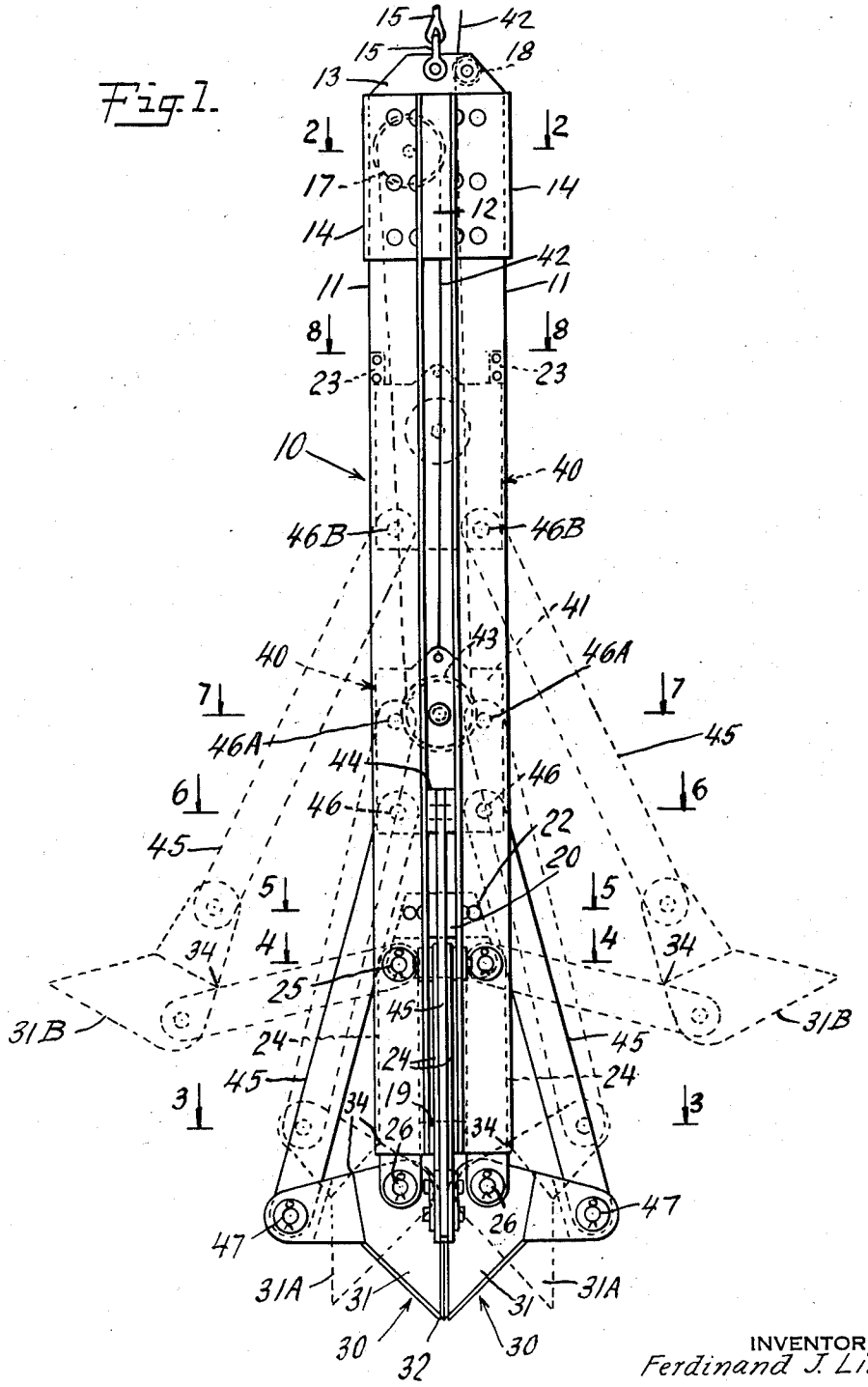
March 26, 1940. F. J. LITTER 2,194,706

MECHANICAL PICK

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Fig. 1.



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MECHANICAL PICK

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Fig. 2.

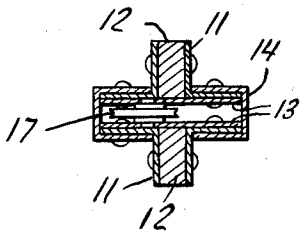


Fig. 5.

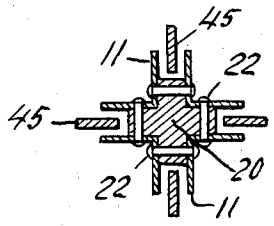


Fig. 3.

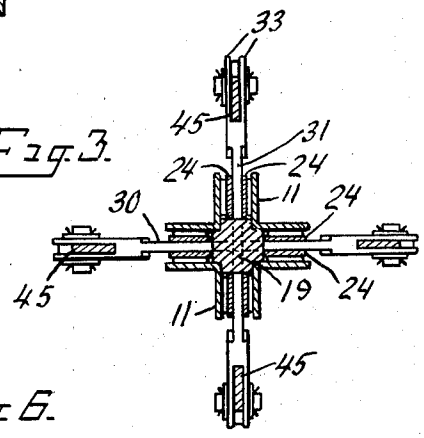


Fig. 6.

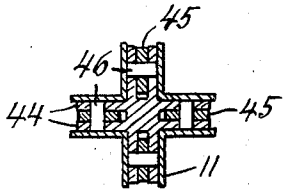


Fig. 4.

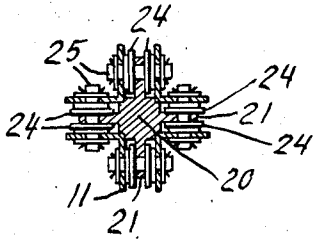


Fig. 7.

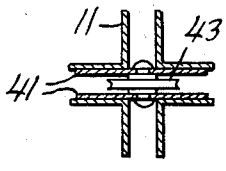


Fig. 9.

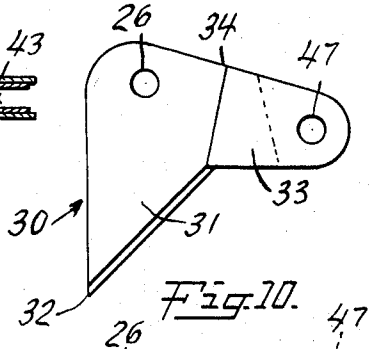


Fig. 8.

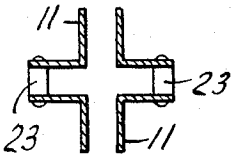
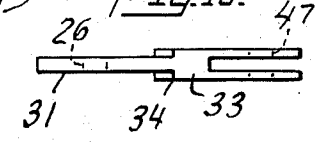


Fig. 10.



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2,194,706

MECHANICAL PICK

Ferdinand J. Litter, New York, N. Y.

Application February 28, 1938, Serial No. 192,999

4 Claims. (Cl. 255—1)

This invention relates to improvements in mechanical picks for loosening compact earth or other material, especially for the purpose of facilitating its excavation.

Its object is to provide a device of this character which is actuated mechanically.

More particularly, its object is to provide an apparatus which can be lowered through a caisson to loosen material at the base of the caisson and under its lower edges.

These and other objects of the invention will appear in the following specification in which I will describe an apparatus which embodies the invention, the novel features of which will be set forth in claims.

Referring to the drawings,

Fig. 1 is an elevation of a mechanical pick which is made according to and embodies the present invention, with its parts shown in different relative positions;

Figs. 2–8 inclusive, are sectional plan views of the parts shown in Fig. 1, the section being taken respectively on the lines 2—2, 3—3, 4—4, 5—5, 6—6, 7—7 and 8—8 of the latter figure;

Fig. 9 is an elevation of one of the pick members;

Fig. 10 is a plan view of the part shown in Fig. 9.

10 designates a rigid frame built up of four angle irons 11. Their flanges, which are parallel to one plane, are riveted at their upper ends to spacers 12 and those at right angles thereto are riveted to plates 13. The latter flanges are further reinforced by channel irons 14. A shackle 15 is connected to the upper central part of the plates 13 which extend above the angle irons 11. A hoisting cable 16 is secured to this shackle, by means of which the device may be lifted and lowered. 17 is a sheave and 18 a guide roller mounted to rotate between the plates 13. Near their lower ends the angle irons 11 are riveted to a cross-shaped spacer 19 (Fig. 3).

20 is an intermediate spacer, notched to engage the inner corners of the angle irons and having four flanges 21 extending outwardly between and spaced from the flanges of the angle irons (Fig. 4). This spacer extends somewhat above its flanges 21 and is riveted to the angle irons at 22 (Fig. 5).

Somewhat below the plates 13, in the position shown below the section line 8—8 of Fig. 1, are two other spacers 23, to which one of the flanges of each of the angle irons is riveted, as shown in Fig. 8.

Four pairs of links 24 are pivoted at 25 to the flanges 21 of the spacer 20 between these flanges and adjacent flanges of the angle irons 11. The lower ends of these links are pivoted at 26 to pick members 30. These comprise flat blades 31 which are straddled by the links 24. The lower edges of the blades converge to sharp points 32. Integral arms 33 extend laterally from the blades. These are thicker than the blades and form shoulders 34 which serve a purpose which will be explained later. The outer ends of the arms are bifurcated, as shown clearly in Fig. 10.

40 is a traveler which moves vertically between the angle irons of the frame. It comprises a pair of plates 41, to the upper central part of which an actuating rope or cable 42 is attached and between which a sheave 43 is rotatably mounted. The lower part of the traveler forms four bifurcated arms 44, ninety degrees apart (Fig. 6), to which the upper ends of links 45 are pivoted at 46. The lower ends of these links lie between the bifurcated parts of the arms 33 of the pick members and are pivoted thereto at 47.

From Fig. 1 it may be seen that the actuating rope 42 passes upwardly from its point of attachment to the plates 41, over sheave 17 near the top of the frame, thence down to and under sheave 43 on the traveler and upwardly therefrom by the guide roller 18 and through the top of the frame.

With the parts in the relative positions shown in full lines, the apparatus is lowered until the blades 31 penetrate the ground, or other material to be loosened. Then by a pull on the actuating rope the traveler 40 is raised until the pivots between it and the upper parts of links 45 reach the positions in which they are indicated at 46A in Fig. 1. This will impart a partial rotation to the pick members until they reach the positions in which their blades are shown in dotted lines in Fig. 1 at 31A. The upward pull on cable 42 which produces this effect does not lift the frame 10 because it has a downward pull on sheave 17. The block and fall arrangement causes a reduced motion of the traveler 40 in relation to that of the free end of cable 42 which results in crowding links 24 against the lower end of the frame 10 during this rotation. The extent of this rotation is limited by the abutment of their shoulders 34 against the outer edges of the links 24. This movement of the pick members causes their blades to cut through the material in which they are embedded.

Now a further upward movement of the traveler 40 in the frame 10 will cause the links 24, 45 and the pick members 30 to swing outwardly. This movement of the traveler is limited by the

spacers 23. When it has reached its uppermost position in the frame, the upper pivots for links 45 will be in the positions indicated by dotted lines at 46B in Fig. 1 and the blades of the pick members in the positions shown at 31B.

It will be seen that this apparatus has the advantage of undercutting the material at the base of an opening or of a caisson through which it is lowered.

Modifications of construction may be made within the scope of the invention and no limitations are intended beyond those imposed by the appended claims.

What I claim is:

1. A frame, links pivoted thereto near their upper ends, pick members pivoted to the lower parts of said links and supported by said links in back-to-back relation, said pick members having arms extending laterally beyond the frame, a traveler above the pivots near the upper ends of said links movable in the frame, and connections between the traveler and said arms.

2. A frame, links pivoted thereto near their upper ends, pick members pivoted to the lower parts of said links and supported by said links in back-to-back relation, said pick members having arms extending laterally beyond the frame, a traveler above the pivots near the upper ends of said links movable in the frame, and a second series of links interconnecting the traveler and said arms.

3. A frame, links pivoted thereto near their upper ends, pick members pivoted to the lower parts of said links, said pick members having arms extending laterally beyond the frame, a traveler above the pivots near the upper ends of said links movable in the frame, a second series of links interconnecting the traveler and said arms whereby the initial movement of the traveler will impart a partial rotation of the pick members, and abutments on the pick members arranged to engage the first mentioned links to arrest their movement in relation to said first mentioned links, the aforesaid parts being so constructed and arranged that further movement of the traveler in the frame will swing the first mentioned links and the pick members outwardly.

4. A frame, links pivoted near their upper ends to the frame above its lower end, pick members pivoted to the lower parts of said links, said pick members having arms extending laterally beyond the frame, a traveler above the pivots near the upper ends of said links movable in the frame, a sheave on the traveler, a sheave in the upper part of the frame, a flexible cable affixed to the traveler and passing around said sheaves for moving the traveler in the frame, and a second series of links interconnecting the traveler and said arms.

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