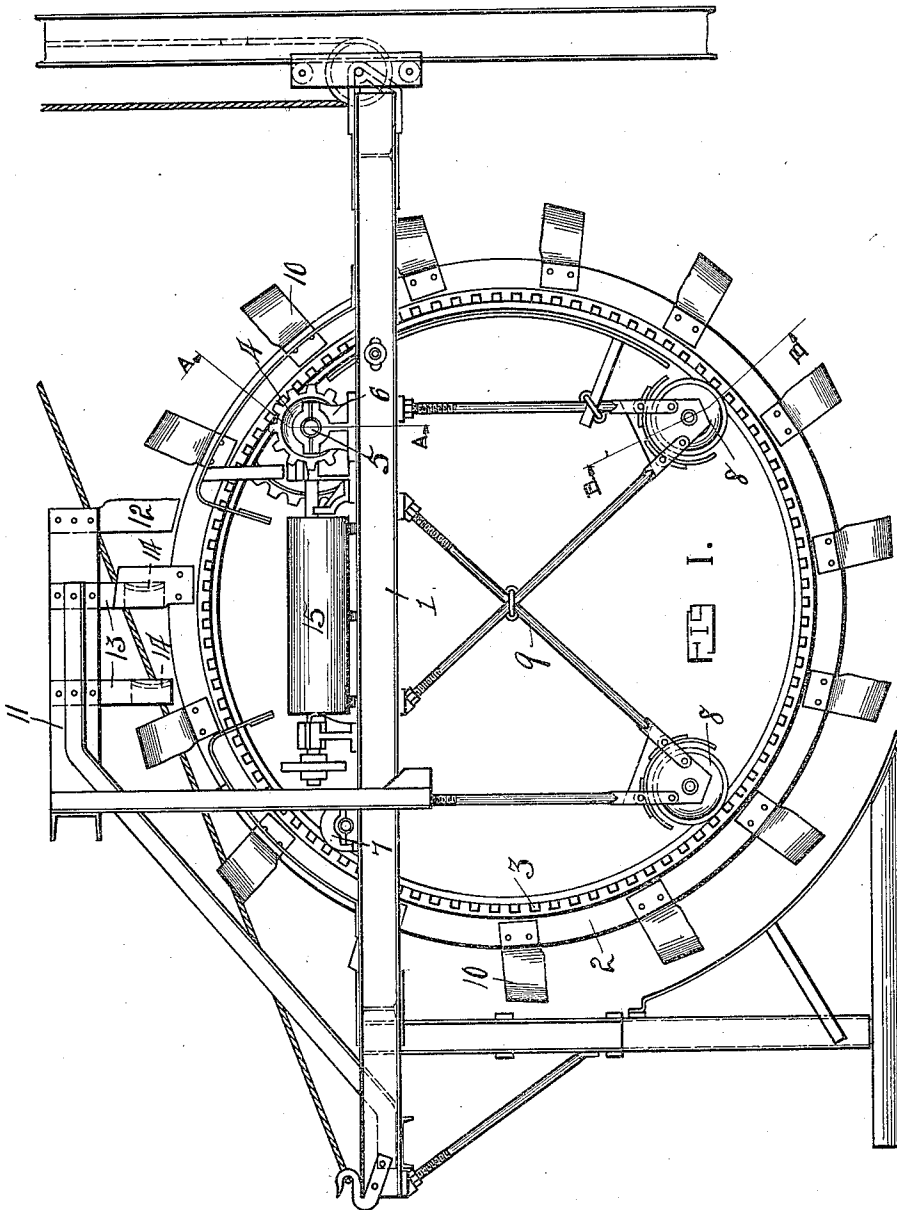


1,081,454.

L. A. KRUPP.  
EXCAVATOR.  
APPLICATION FILED JULY 18, 1913.

Patented Dec. 16, 1913.

2 SHEETS—SHEET 1.



WITNESSES  
*E. E. Thomas.*  
*D. C. Walter*

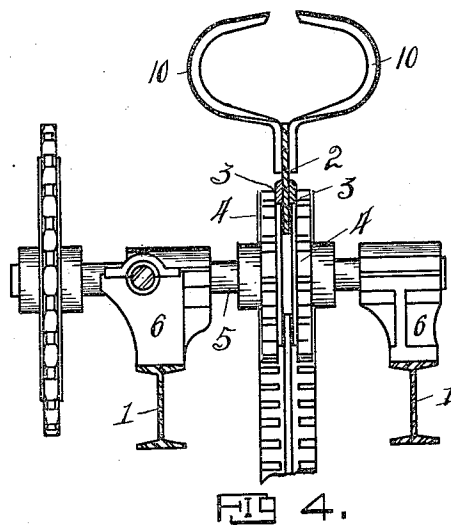
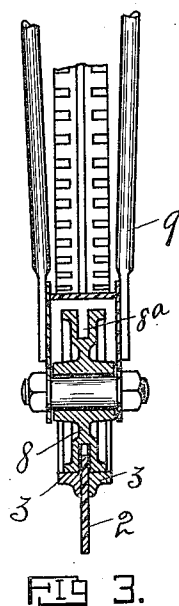
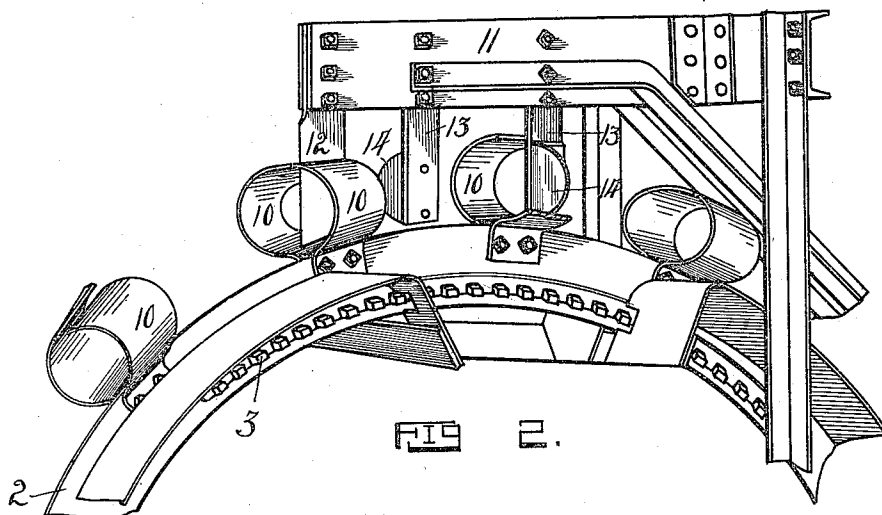
INVENTOR.  
*Leo A. Krupp.*  
BY *Owen & Owen*  
ATTORNEYS.

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INVENTOR  
Leo A. Krupp,  
BY Owen & Owen,  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

LEO A. KRUPP, OF FINDLAY, OHIO, ASSIGNOR TO THE BUCKEYE TRACTION DITCHER COMPANY, OF FINDLAY, OHIO, A CORPORATION OF OHIO.

## EXCAVATOR.

1,081,454.

Specification of Letters Patent.

Patented Dec. 16, 1913.

Application filed July 18, 1913. Serial No. 779,696.

*To all whom it may concern:*

Be it known that I, LEO A. KRUPP, a citizen of the United States, and a resident of Findlay, in the county of Hancock and State of Ohio, have invented a certain new and useful Excavator; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to excavating apparatus and has particular reference to a bucket construction therefor for use in extremely sticky and heavy soils, such, for instance, as gumbo and blue clay. Heavy soils of this nature must be handled in an entirely different way from soils containing sand or gravel, and for this reason the types of excavating buckets commonly employed in connection with either the digging wheel type or endless chain type of excavators are not suitable for working in heavy soils, as they ordinarily comprise top, sides and a rear end or back, and are open at their inner sides to permit the diggings to fall by gravity therefrom when the bucket has reached a predetermined point in its ascending movement. The sides of the wheel rim of a wheel type of excavator and also of the chains in an endless chain type of excavator are customarily placed quite close to the side planes of the buckets so that they are in close proximity to the sides of a trench being dug. This construction of bucket carrying means is found to be objectionable when working in sticky or heavy soils as the frictional contact of the trench sides with the bucket carrying means causes a very heavy pull thereon, and the carrying means often becomes clogged with mud.

The object of my invention is the provision of a simple and efficient construction of bucket and cleaning means therefor for use in connection with sticky and heavy soils, whereby clay or the like is thoroughly cleaned from the buckets after each digging operation thereof, thus enhancing the practicability and commercial value of apparatus of this character.

A further object of the invention is the provision of a single rim wheel or other

suitable bucket carrying means whereby such rim is disposed at the transverse center of the buckets in spaced relation to the planes of the bucket sides, thus preventing the frictional pulling action of the trench sides on the sides of the bucket carrying rim, and also reducing to a minimum the liability of mud gathering on the rim.

The invention is fully described in the following specification, and while, in its broader aspect, it is capable of embodiment in numerous forms, a preferred embodiment thereof is illustrated in the accompanying drawings, in which,—

Figure 1 is a side elevation of an excavating wheel with the associated carrying and conveyer parts, Fig. 2 is an enlarged perspective view of the upper portion of the wheel with the buckets and cleaning means comprising the invention associated therewith, and Figs. 3 and 4 are enlarged sections on the lines B, B and A, A, respectively, in Fig. 1.

Referring to the drawings, 1, 1 designate the wheel carrying beams of a wheel type of excavator, and 2 the excavating wheel carried thereby. The wheel 2 is provided with a single rim which is flat in an equatorial plane and is provided at each side thereof adjacent to its inner edge with an annular series of rack-teeth 3 with which driving pinions 4, that are mounted on a drive shaft 5, engage. The shaft 5 is mounted in bearings 6 rising from the beams 1, 1 and is connected to any suitable source of power for driving the same.

Coöperating with the pinions 4, 4 to support the wheel 2 for rotary movements relative to the frame beams is a grooved guide wheel 7 that is mounted on the beams 1 and similar grooved guide wheels 8, 8 which are carried by a sub-frame structure 9 depending from said beams. The guide wheels 7 and 8 are provided with peripheral grooves 8<sup>a</sup>, as shown in Fig. 3, for receiving the inner flange edge of the wheel rim, the peripheries of the guide-wheel coacting with the inner side of the circular racks 3.

The buckets comprising my invention are secured to the rim of the wheel in equidistantly spaced relation therearound, and each comprises a pair of oppositely curved blade members 10, which are secured at their inner edges to opposite sides of the wheel rim without the racks 3 and have

their free edges terminating in slightly spaced relation at the outer central portion of the bucket. The buckets which are formed by the coöperation of each set of blades 10, 10, are preferably slightly restricted from their forward to their rear ends and have their rear ends open to permit a free discharging of matter rearwardly therefrom.

Supported by the frame beams 1 above the wheel is a frame part 11 from which depend a blade 12 and a pair of arms 13 arranged in successive spaced relation one back of the other, with the arms each carrying a bucket cleaning spoon 14 at one side thereof, such spoons having their positions reversed for the different arms. As the buckets ascend from digging position the blade 12 first passes through the space between the bucket sides or blades 10 and extends a sufficient distance down into a bucket to sever the clay or other heavy soil slug carried thereby into two sections lengthwise thereof, and the arms 13, 13 and spoons 14, 14 then pass in successive order through the buckets, one spoon effecting a discharge of one of the two sections of soil from a bucket and the other spoon effecting a discharge of the remaining severed section of soil. It is found in practice that the severing in two of a soil slug which is carried by a bucket and then successively discharging the sections thereof from a bucket is more efficient and satisfactory than to provide a single spoon for forcing the entire slug from a bucket. As the slug sections are discharged from a bucket they fall down at opposite sides of the wheel rim onto a conveyer apron 15 that operates within the upper portion of the wheel.

It is evident that while I have particularly shown and described my improved bucket and cleaning means in connection with a wheel type of excavator, they can be used in connection with a chain type of excavator if desired without departing from the spirit of my invention, and I wish it understood that my invention is not limited to any specific construction or arrangement

of the parts except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is,—

1. In combination, bucket carrying means, a plurality of sets of blades carried by said means with the blades of each set spaced apart at their free edges and coöperating to form an excavating bucket, means for working between the blades at a predetermined point in a movement of said carrying means to sever into sections a soil slug carried between the blades, and means for ejecting a severed soil slug from between a set of blades.

2. In combination, an excavating wheel, a bucket carried by said wheel and comprising two separated side portions, and means for working between the bucket sides to sever soil carried by the buckets and to eject the severed sections therefrom.

3. In combination, an excavating wheel, buckets carried by said wheel, said buckets being open at front and rear and having their opposite side portions spaced apart, a blade for passing through each bucket at a predetermined point in a revolution thereof to longitudinally sever soil carried thereby, and separate means operating to successively eject the severed sections from each bucket.

4. In combination, a plurality of excavating buckets comprising spaced apart blades, carrying means for said buckets, a blade and two ejector members projecting into the path of movement of the buckets for passing through the same as the buckets are moved, and successively operable to sever the soil carried by a bucket and to eject first one and then the other of the severed sections therefrom.

In testimony whereof, I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

LEO A. KRUPP.

Witnesses:

GRACE SHANK,  
CHARLES E. JORDAN.