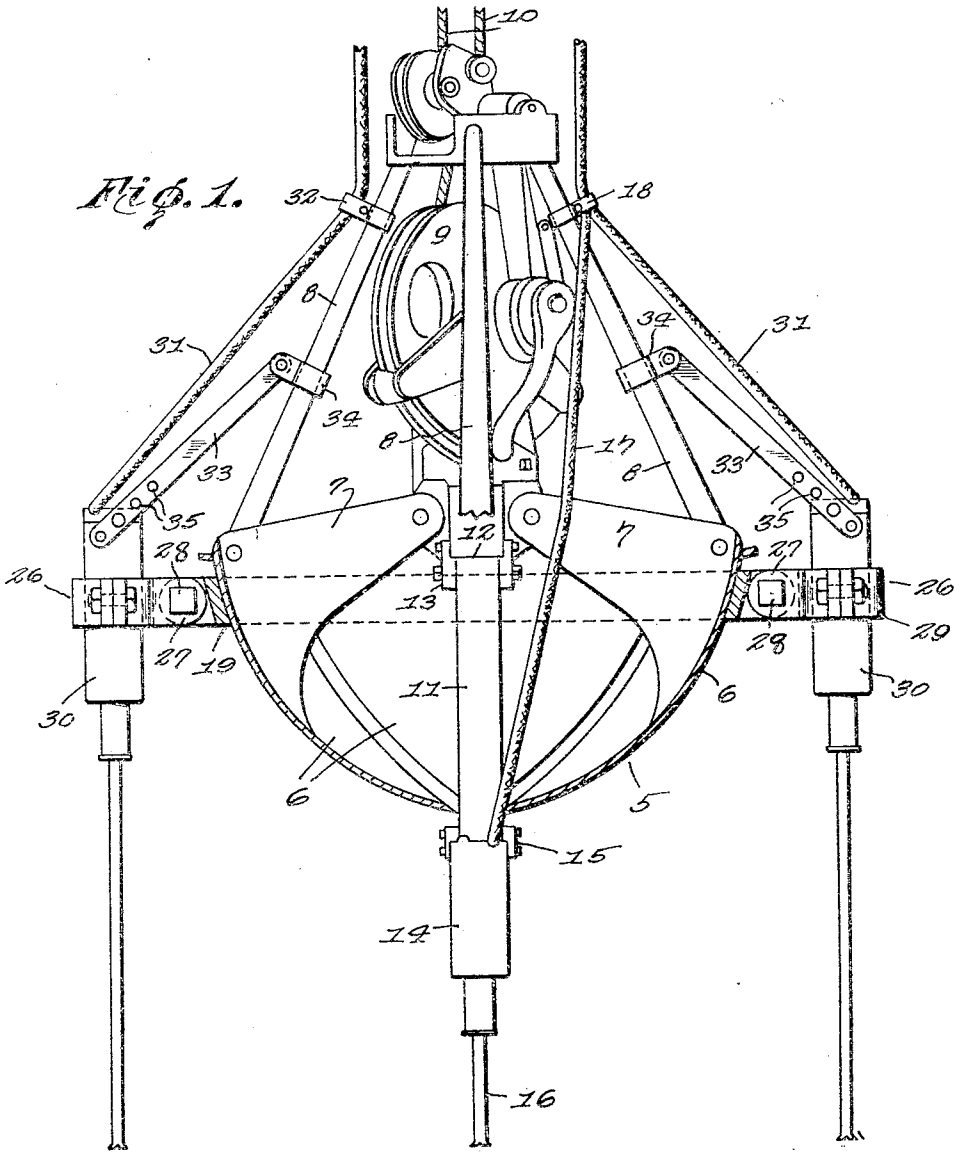
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EXCAVATING BUCKET

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Fig. 1.



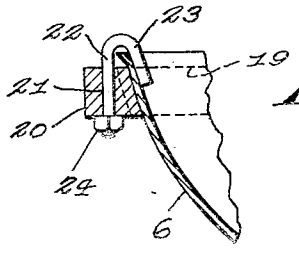


Fig. 4.

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Fig. 3.

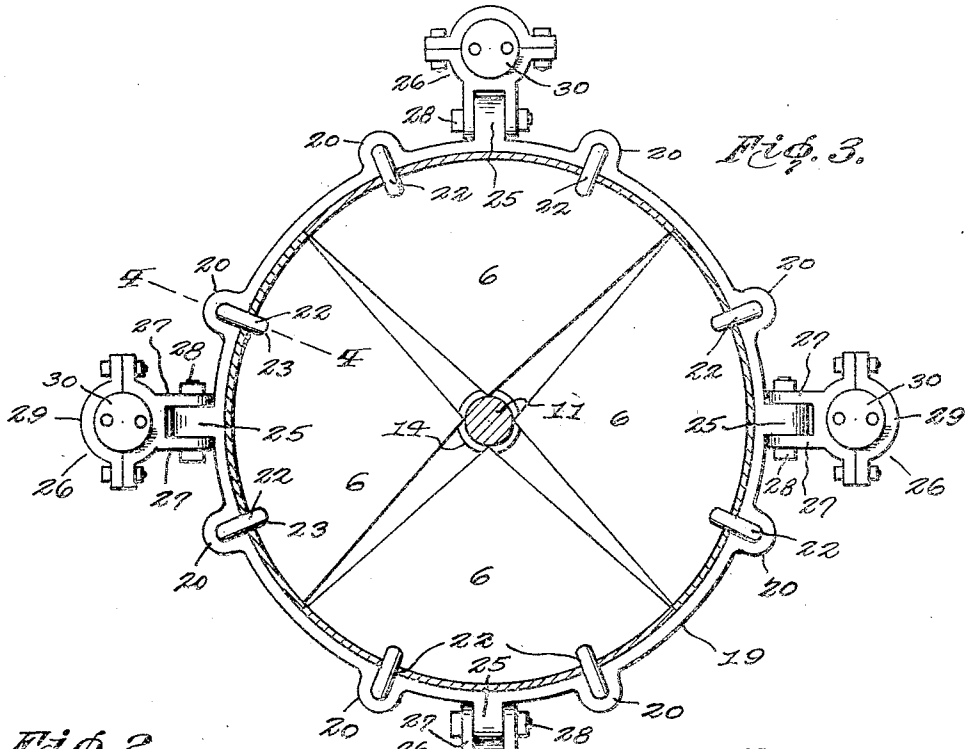
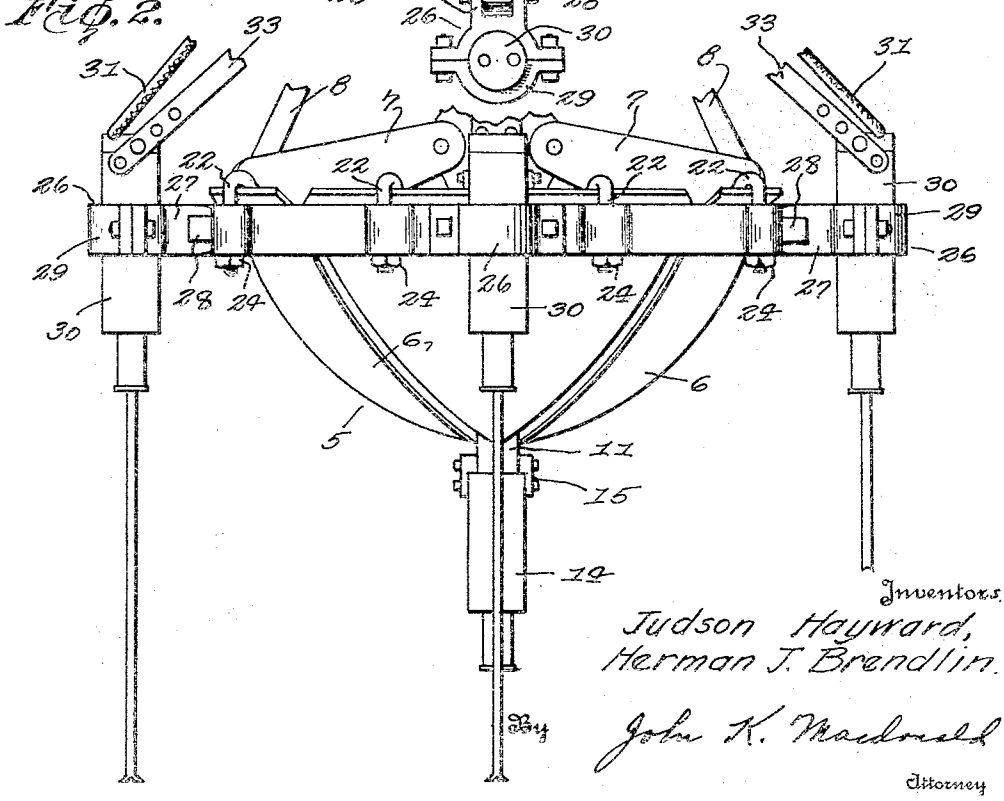


Fig. 2.



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UNITED STATES PATENT OFFICE

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EXCAVATING BUCKET

Application filed October 2, 1931. Serial No. 566,556.

This invention relates to excavating devices and the improvements are directed to novel means for detachably connecting one or more pneumatic hammers or drills to an orange-peel bucket, or the like.

Those skilled in the art to which this invention appertains are aware that when an orange-peel bucket is being operated in a caisson or bin, the material therein is frequently too solid for the blades or scoops of the bucket to penetrate and dislodge said material. Under these conditions it is necessary to employ another tool, to break up the material so that the bucket can handle the same. If the caisson be a deep one it may be necessary to dismantle the bucket in order that one of the operating lines may be employed to handle the hammer or drill; and possibly a man would have to be lowered into the caisson to handle the hammer or drill.

The primary object of the present invention is to provide novel means whereby one or more pneumatic hammers or drills may be removably attached to an orange-peel bucket without dismantling the latter.

Another object resides in the provision of means for securing a hammer to a bucket whereby said hammer may be held by the blades of the bowl of said bucket, and whereby said hammer may be quickly attached or detached without necessitating the removal of the bucket from the operating lines.

Still another object of the invention is to provide an annulus adapted to encircle the upper peripheral surface of the bowl of a bucket for the support of a plurality of pneumatic hammers in concentric relation to said bucket.

A further object is to provide means for removably attaching said annulus to said bowl of said bucket.

A still further object of the invention resides in the provision of means, associated with said annulus, whereby said pneumatic hammers may be maintained in a vertical position or may be adjusted individually to assume an inclined position to the right or the left of said vertical position.

With these objects in view, together with others which will appear as the description proceeds, the invention resides in the novel formation, combination, and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings, and particularly pointed out in the claims.

In said drawings:

Figure 1 is an elevation of an orange-peel bucket with our invention attached thereto, the bowl of said bucket being shown in central vertical section.

Fig. 2 is an elevation of the lower portion of a bucket showing the annulus and the series of pneumatic hammers carried thereby.

Fig. 3 is a plan view of said annulus and the hammers with the blades of the bucket in horizontal section to show the means for attaching said annulus to said blades.

Fig. 4 is a sectional detail, taken on the line 4—4 of Fig. 3, to show one of the hook members and its engagement with the upper inner peripheral surface of a blade.

Referring now more in detail to the accompanying drawings, wherein like characters of reference denote similar parts throughout the several views, let 5 indicate the bowl of an orange-peel bucket, said bowl comprising a series of blades 6 carried by arms 7 and operated through the intermediary of the links 8, reel 9 and the usual holding and closing ropes 10, all of said parts being well-known and common to buckets of the orange-peel type.

As previously pointed out it is proposed to arrange a single pneumatic hammer centrally of the bowl of a bucket, and upon inspection of Fig. 1 it will be noted that we have provided a post 11 having its upper end abutting the lower center of the bucket, as indicated at 12, and being maintained in proper position by means of suitable securing devices 13. In this connection it will be observed that the blades of the bucket are opened and then closed so that the tips of said blades engage the lower end of said post 11 thereby forming a four-point support for said post. As shown in Fig. 1, the lower end of said post projects slightly beyond the points of the bowl thus permitting the attachment of a pneumatic hammer 14 to the projecting end of said post, suitable fasten-

ing means 15 being employed for this purpose. Said hammer 14 is provided with the usual drill 16, and air hose 17, the latter extending up through the bowl and being held in position by means of a clamp 18 affixed to one of the arms or links 8. The connection between the post and hammer can be so made that it merely means connecting the hammer to the lower end of the post and allowing the hammer to re-act against not only the post but the combined weight of the bucket and the post. In view of the above arrangement the hammer may be quickly attached or detached and the machine handling the bucket is able to handle and place the hammer anywhere within the range of the boom operating said bucket.

It is further proposed to provide means whereby a plurality of pneumatic hammers may be arranged in concentric relation to the bowl of a bucket, and in the present embodiment of the invention, said means includes an annulus 19 adapted to encircle the bowl 5 and to be securely associated therewith, as will presently appear.

Upon inspection of Fig. 3 it will be noted that said annulus 19 is provided with a series of radially projected lugs 20, each lug being apertured as shown at 21, (Fig. 4), for the reception of ring-bolts 22, the upper ends of said bolts being hooked, as indicated at 23, to extend over the rim of the bowl and to contact the inner upper peripheral surface thereof, as shown in Figs. 3 and 4. The application of the nuts 24 obviously assures an intimate contact between said annulus and the blades 6 constituting the bowl 5. Reverting to Fig. 3 it will be observed that said annulus 19 is also provided with a series of projections 25 for supporting a plurality of clamping members 26, each of said members comprising a pair of spaced apertured arms 27 adapted to be pivotally attached to said projections 25 by means of bolts 28, as shown, said clamping members 26 also including plates 29 whereby the pneumatic hammers 30 may be firmly held in position. Air hose 31 are provided for the hammers, said hose being clamped to an adjacent link 8 by means of a clasp 32, or the like. From the foregoing it is obvious that the bolts 28 may be manipulated so that the series of hammers may be individually inclined to the right or left of the vertical positions shown in Fig. 2, and in order to steady the hammers, each is provided with a brace 33, one end of the latter being adjustably connected to the upper part of the hammer and the other end being pivotally supported by clamp 34 attached to an adjacent link 8. In view of the plurality of apertures 35 in each of the braces 33, the hammers may be adjusted to swing through an arc and assume an inclined position to the right or left of the vertical positions shown.

While the body portion of the central hammer 14 is positioned below the body portions of the outer hammers 30, it will be understood that drills of various lengths may be used so that the lower ends of all the drills will be positioned in the same horizontal plane. It will also be appreciated that the annulus 19 may be made to support any number of pneumatic hammers and that the showing of four hammers carried by said annulus is illustrative and not restrictive.

While the present is a disclosure of the preferred embodiment of the invention, it is to be understood that the invention is not limited thereto, as various changes in the minor details of construction, proportion and arrangement of parts may be resorted to without departing from the spirit of the invention as defined in the appended claims.

We claim:

1. The combination with the bowl of an orange-peel bucket, of a pneumatic hammer held by the blades constituting said bowl.

2. The combination with the bowl of an orange-peel bucket, of a post attached to said bucket and held by the blades constituting said bowl and a pneumatic hammer carried by and depending from said post.

3. The combination with the bowl of an orange-peel bucket, of a post positioned within said bowl, means for removably attaching said post to said bucket and a pneumatic hammer carried by the lower end of said post.

4. The combination with the bowl of an orange-peel bucket, of a plurality of pneumatic hammers depending from the periphery of said bowl.

5. The combination with the bowl of an orange-peel bucket, of an annulus carried by said bowl and a plurality of pneumatic hammers borne by said annulus.

6. The combination with the bowl of an orange-peel bucket, of an annulus carried by said bowl and a plurality of pneumatic hammers adjustably borne by said annulus.

7. The combination with the bowl of an orange-peel bucket, of an annulus encircling said bowl, means for attaching said annulus to said bowl and a plurality of pneumatic hammers carried by said annulus.

8. The combination with the bowl of an orange-peel bucket, of an annulus encircling said bowl, means for attaching said annulus to said bowl, a plurality of pneumatic hammers carried by said annulus and means for adjusting the position of said hammers.

9. The combination with the bowl of an orange-peel bucket, or an annulus encircling said bowl, means for attaching said annulus to said bowl, clamping members pivotally borne by said annulus and a plurality of pneumatic hammers carried by said clamping members.

10. The combination with the bowl of an orange-peel bucket, of a pneumatic hammer held by the blades constituting said bowl, an

annulus carried by said bowl and a plurality of pneumatic hammers borne by said annulus.

11. The combination with the bowl of an orange-peel bucket, of a post attached to said bucket and held by the blades constituting said bowl, a pneumatic hammer carried by and depending from said post, an annulus encircling said bowl, means for attaching said annulus to said bowl and a plurality of pneumatic hammers carried by said annulus.

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