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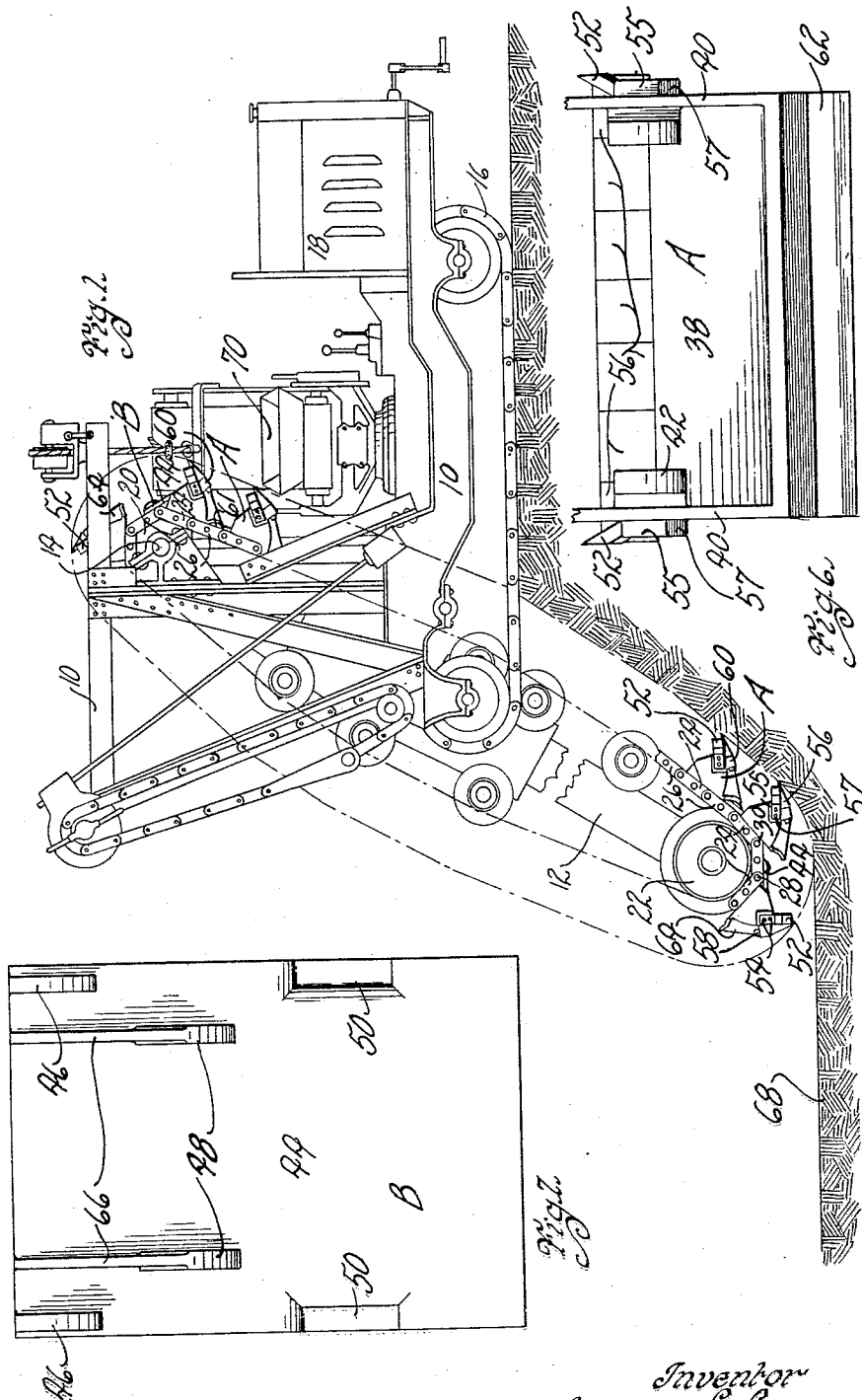
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EXCAVATOR BUCKET AND CLEANER CONSTRUCTION

Filed July 16, 1930

3 Sheets-Sheet 1



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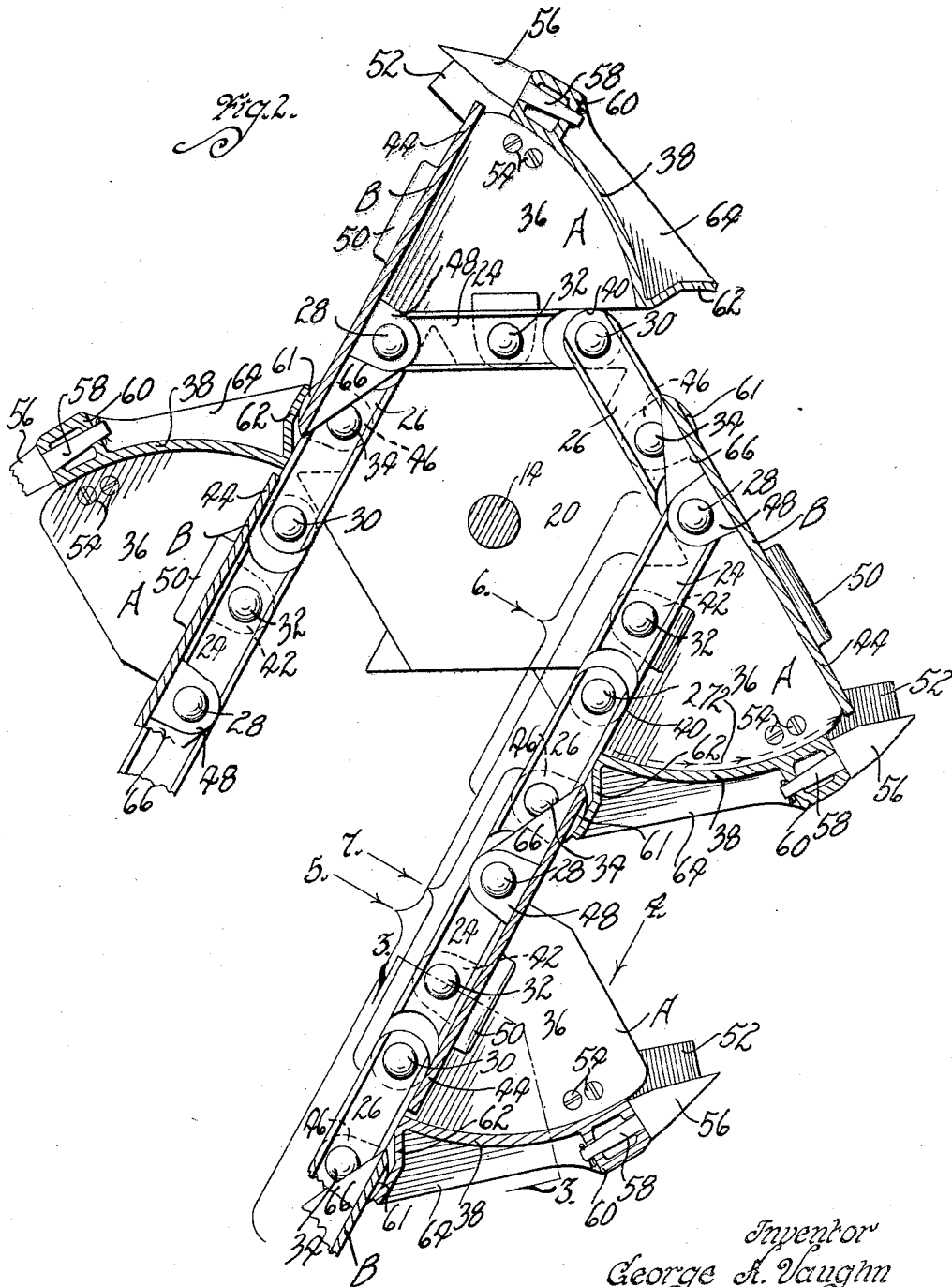
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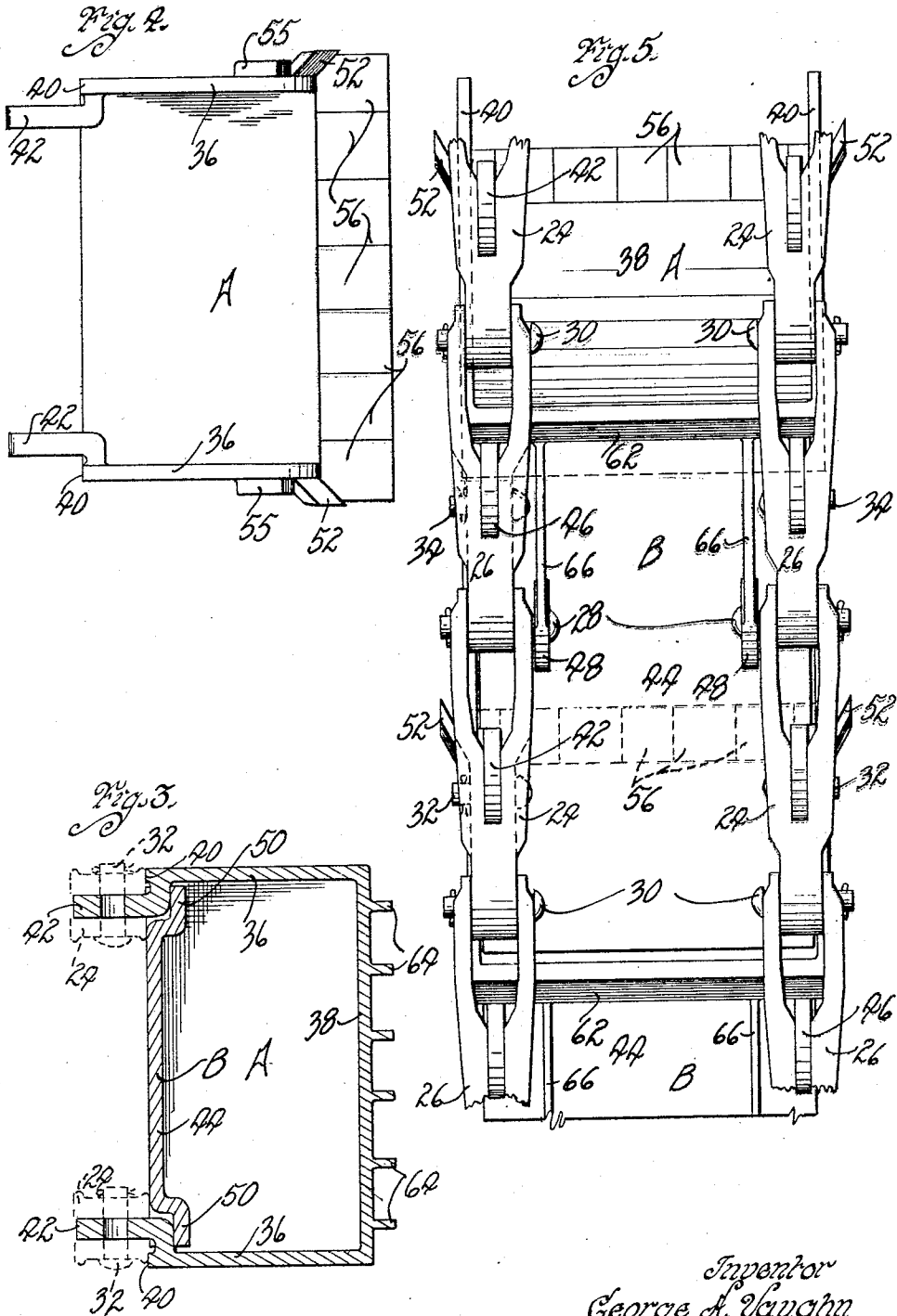
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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EXCAVATOR BUCKET AND CLEANER CONSTRUCTION

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The object of my invention is to provide an excavator bucket and cleaner construction in which buckets and cleaners are adapted to be attached to a standard excavator chain, both the buckets and cleaners being simple, durable and comparatively inexpensive to manufacture.

A further object is to provide for use with a standard excavator chain consisting of links and link pins, a bucket construction adapted to be attached to one link of the chain and a cleaner for the bucket adapted to be connected with the next forward link of the chain, the bucket member having sides and a bottom and an open back, the cleaner forming a back for the bucket in such a way that when the chain passes over a sprocket wheel, pivotal movement of the cleaner relative to the bucket will discharge material from the bucket and clean the bottom and sides thereof.

Still a further object is to provide in an excavator having a link chain consisting of links and link pins, each link of the chain having an opening between its ends in combination with a bucket having an ear for attachment to one link of the chain by means of a bucket pin extending through the opening in such link and the ear and a cleaner for the next forward link having a pair of ears, one pinned to the opening in such link by means of a cleaner pin and the other ear secured to the link chain by extending a link pin of the chain located between the bucket and the cleaner through the second ear of the cleaner.

Still a further object is to prevent pivotal movement of the bucket relative to the link to which it is secured by contact of the back edge of the side of the bucket with the link, the two ears of the cleaner serving to prevent pivotal movement of the cleaner relative to the link to which it is secured.

Another object is to provide digger teeth on the bucket and an overlapping flange to coact with the next following cleaner.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more

fully set forth, pointed out in my claims and illustrated in the accompanying drawings. Although the invention is susceptible of a variety of embodiments, it is unnecessary to fully describe and illustrate more than one in order to give a full understanding of the invention both from its structural and functional standpoints. Accordingly, I have illustrated a preferred and desirable embodiment of the invention in the accompanying drawings, in which:

Figure 1 is a side elevation of an excavator showing an excavator chain thereon embodying my invention.

Figure 2 is a vertical, central sectional view through the excavator chain, buckets, and cleaners, showing them passing over an upper sprocket for the excavator chain.

Figure 3 is a sectional view on the line 3-3 of Figure 2.

Figure 4 is a front end view of a bucket as viewed in the direction of the arrow 4 of Figure 2.

Figure 5 is a back elevation of a portion of the chain, its buckets and its cleaners looking in the direction of the arrow 5 of Figure 2.

Figure 6 is a back elevation of the bucket looking in the direction of the arrow 6 of Figure 2; and

Figure 7 is a back elevation of the cleaner looking in the direction of the arrow 7 of Figure 2.

On the accompanying drawings I have used the reference numeral 10 to indicate generally the frame of an excavating machine. An excavator boom 12 is pivoted on a drive shaft 14 supported by the framework 10. The framework itself is supported by caterpillar treads 16 and the excavator mechanism is driven by a motor 18.

The excavator chain with buckets and cleaners travels over a drive sprocket 20 and an idler pulley 22 which are mounted on the drive shaft 14 and the lower end of the boom 12 respectively. The excavator chain consists of links 24 and 26 and link pins 28 and 30. Each link 24 is provided between its ends with an opening through which a bucket pin 32 extends. Each link 26 is provided with

an opening between its ends through which a cleaner pin 34 extends.

A bucket A is secured to each link 24 and includes sides 36 and a curved bottom 38. The back edge 40 of each side 36 is adapted to coact with the outer face of a link 24 as shown in Figure 2, and in dotted lines in Figure 3 of the drawings.

It will be noted that there are two links 24 for each bucket so that there are two stretches of excavator chain side by side and located adjacent the side edges of the bucket A.

Extending inwardly between the forked links 24 are perforated bucket ears 42 through which the bucket pins 32 extend. Thus the buckets are secured to the links 24 by the single pins 32 and due to the back edges 40 of the sides 36 contacting with the links 24 pivotal movement of the bucket on the bucket pin 32 relative to the link 24 is prevented.

Secured to each link 26 is a cleaner B. Each cleaner consists of a substantially flat plate 44 extending back between the sides 36 of the following bucket A to form a back and cleaner therefor. The cleaner B is provided with a pair of perforated ears 46 and 48 adjacent each side edge thereof. The ears 46 extend between the forked links 26 and are pinned to the links by the cleaner pins 34 (see Figure 5). The ears 48 are somewhat closer together than the ears 46 and are located inside of the links of the chain in position for registry with the link pins 28 located between the bucket link 24 and the next forward cleaner link 26. By the double connections 34 and 28 pivotal movement of the cleaner B relative to its links 26 is prevented.

Adjacent each side edge of the plate 44 a bulge 50 is provided to form a socket over the inwardly and backwardly extending ear 42 which extends from the side 36 of the bucket A (see Figures 2 and 3). It will be noted that the bulges 50 contact with the ears 42 and also with the edges of the links 24 and 26 of the chain which act as a stop for the plate 44 when the chain is traveling in a straight direction.

I preferably provide digger teeth 52 secured to the sides 36 of the bucket A by bolts or the like 54 and digger teeth 56 having shanks 58 extending into a cross bar 60 on the forward edge of the bucket bottom 38. Shoulders 55 and 57 are provided on the sides 36 for the top and back edges of the digger teeth 52 to abut against. A plurality of ribs 61 are located adjacent the forward edge of the cleaner plate 44 and, a backwardly extending flange 62 from the bucket A contacts with these ribs, to prevent inward bowing of the digging stretch of the excavator chain when in operation.

Webs 64 are provided for strengthening the flanges 62 and webs 66 are provided for reinforcing the ears 48 of the cleaner B.

Practical operation

In the operation of an excavator chain as just described, the digging stretch of the chain travels upwardly for digging a ditch 68 with the teeth 52 and 56. As buckets consisting of the sides 36, bottom 38 and the back plate 44 become filled with material it is discharged into a conveyer 70 or the like. In traveling over the drive sprocket 20 as shown in Figure 2, the back 44 of the bucket swings outwardly as indicated by arrows 72 for discharging the material from the bucket and cleaning the sides and bottom 36 and 38 respectively, of the bucket.

It will be obvious that I have provided a construction in which a bucket may be easily and conveniently attached to a standard chain of the type having forked links with openings between their ends and that I have further provided a cleaner for the bucket which also serves as a back for it and which is easily attached to the excavator chain. The buckets may be mounted on every other link of the chain or spaced farther apart if desired, to suit requirements. Replacement of the chain or of either a bucket or a cleaner is very easily done and when one element of the chain breaks, it is not necessary to discard any of the other elements, but the broken element may be replaced to place the chain again in condition for operation.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. In an excavator, a link chain having perforations in the links of the chain intermediate the ends of the links, a bucket, means for securing said bucket to a link of said chain, a cleaner for said bucket and means for securing said cleaner to the next forward link of said chain comprising an ear on the cleaner, said ear being pinned to the link of the chain to which the cleaner is secured by a pin passing through the perforations thereof.

2. In an excavator, a link chain having perforations in the links of the chain intermediate the ends of the links, a bucket, means for securing said bucket to a link of said chain comprising an ear on the bucket, said ear being pinned to the link of the chain to which the bucket is secured by a pin passing through the perforations thereof, a cleaner for said bucket and means for securing said cleaner to the next forward link of said chain comprising an ear on the cleaner, said ear being pinned to the link of the chain to which the cleaner is secured by a pin passing through the perforations thereof.

3. In an excavator, a link chain comprising links and pins, said links having openings between said pins, a bucket having an ear, a pin through said ear and an opening of one of said links, a cleaner having an ear, a pin through said ear and the opening of the next forward link.

4. In an excavator, a link chain comprising links and pins, said links having openings between said pins, a bucket having an ear, a pin through said ear and an opening of one of said links, a cleaner having an ear, a pin through said ear and the opening of the next forward link, said cleaner having a second ear, the link pin of the excavator chain between said bucket and said cleaner extending through said second ear.

5. For use with an excavator chain having links, each link having an opening between its ends, a bucket having an ear to coact with the opening of one of said links and a cleaner having an ear to coact with the opening of the next forward link whereby the bucket and cleaner are mounted on the excavator chain.

6. For use with an excavator chain comprising links pivoted together with link pins and each link having an opening between its ends, a bucket having an ear registering with the opening of one of said links, a cleaner having an ear registering with the opening of the next forward link, bucket and cleaner pins through said openings for mounting the bucket and cleaner on the excavator chain.

7. For use with an excavator chain comprising links pivoted together with link pins and each link having an opening between its ends, a bucket having an ear registering with the opening of one of said links, said bucket having sides engaging with said link to prevent pivotal movement of the bucket relative to its link, a cleaner having an ear registering with the opening of the next forward link, bucket and cleaner pins through said openings for mounting the bucket and cleaner on the excavator chain.

8. For use with an excavator chain comprising links pivoted together with link pins and each link having an opening between its ends, a bucket having an ear registering with the opening of one of said links, a cleaner having an ear registering with the opening of the next forward link, said cleaner having a second ear registering with and receiving the link pin of the excavator chain between the bucket and the cleaner to prevent pivotal movement of the cleaner relative to its link, bucket and cleaner pins through said openings for mounting the bucket and cleaner on the excavator chain.

9. For use with an excavator chain comprising links pivoted together with link pins and each link having an opening between its ends, a bucket having an ear registering with

the opening of one of said links, said bucket having sides engaging with said link to prevent pivotal movement of the bucket relative to its link, a cleaner having an ear registering with the opening of the next forward link, said cleaner having a second ear registering with and receiving the link pin of the excavator chain between the bucket and the cleaner to prevent pivotal movement of the cleaner relative to its link, bucket and cleaner pins through said openings for mounting the bucket and cleaner on the excavator chain.

10. For use with an excavator chain comprising links pivoted together with link pins and each link having an opening between its ends, a bucket having a side and a bottom, the back edge of said side contacting with a link of said chain, said side having an ear registering with the opening in said link, a bucket pin through said ear and said opening, a cleaner for the bucket and forming a back therefor, said cleaner being fixed to the next forward link and said ear constituting a stop for said cleaner.

11. For use with an excavator chain comprising links pivoted together with link pins and each link having an opening between its ends, a bucket having a side and a bottom, the back edge of said side contacting with a link of said chain, said side having an ear registering with the opening in said link, a bucket pin through said ear and said opening, a cleaner for the bucket and forming a back therefor, said cleaner having a pair of ears pinned to the opening of the next forward link and to the link pin which connects the links of the bucket and of the cleaner together.

12. For use with an excavator chain comprising links pivoted together with link pins and each link having an opening between its ends, a bucket having a side and a bottom, the back edge of said side contacting with a link of said chain, said side having an ear registering with the opening in said link, a bucket pin through said ear and said opening, a cleaner for the bucket and forming a back therefor, said cleaner having an ear pinned to the next forward link and a second ear pivoted to the link pin of the two links.

Des Moines, Iowa, May 22, 1930.

GEORGE A. VAUGHN.