M. G. BUNNELL.

DRAG LINE BUCKET EXCAVATOR.

APPLICATION FILED MAR. 18, 1909.

1,167,146.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

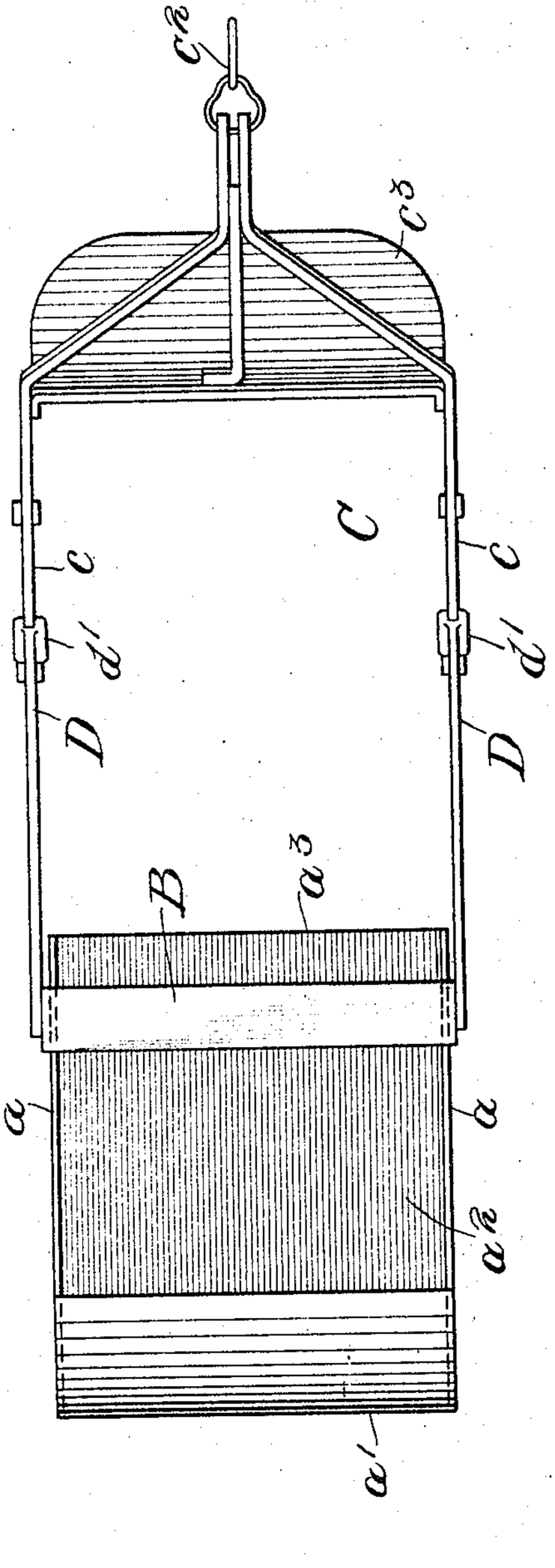
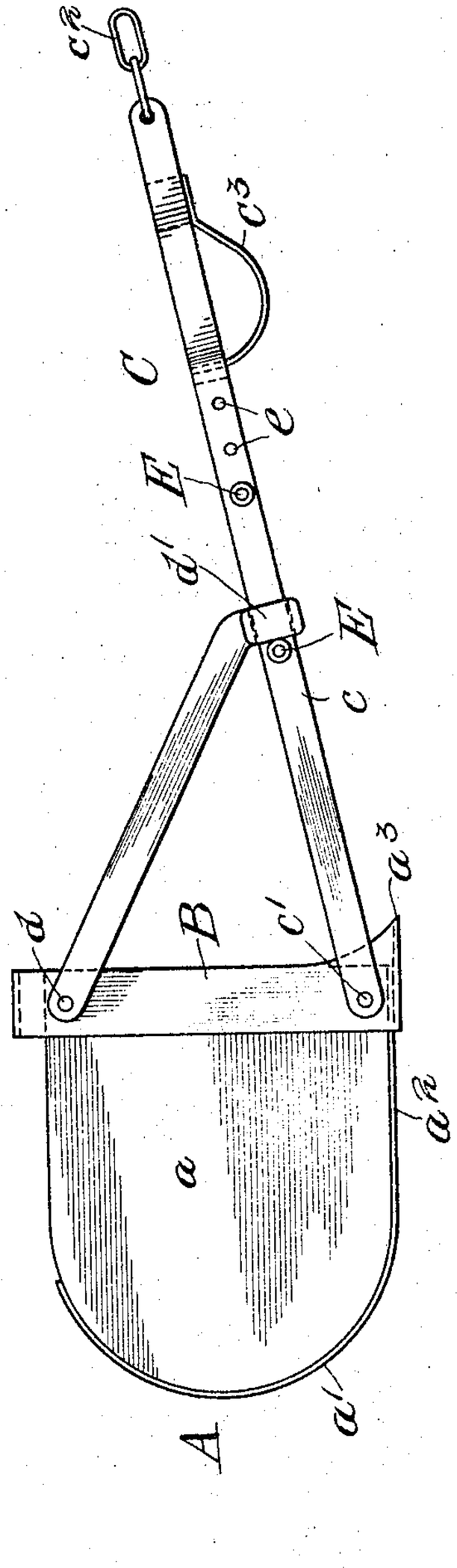


Fig. 2.



WITNESSES

A. Andersen.

C. E. Taylor

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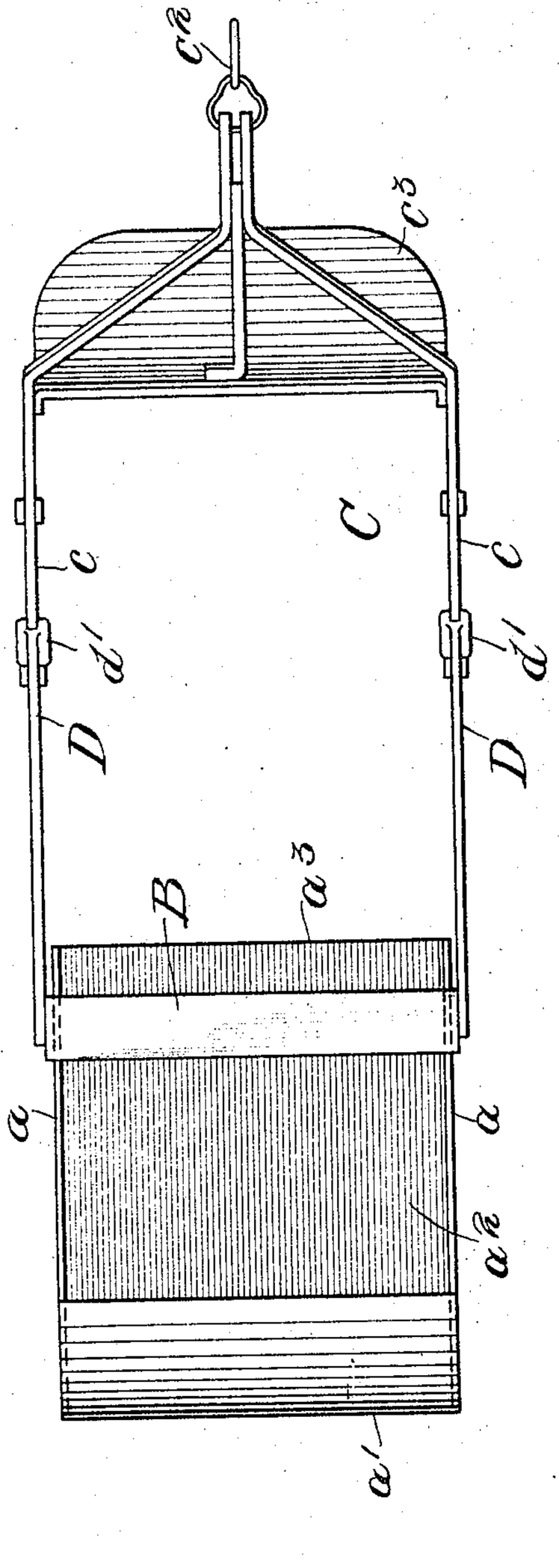

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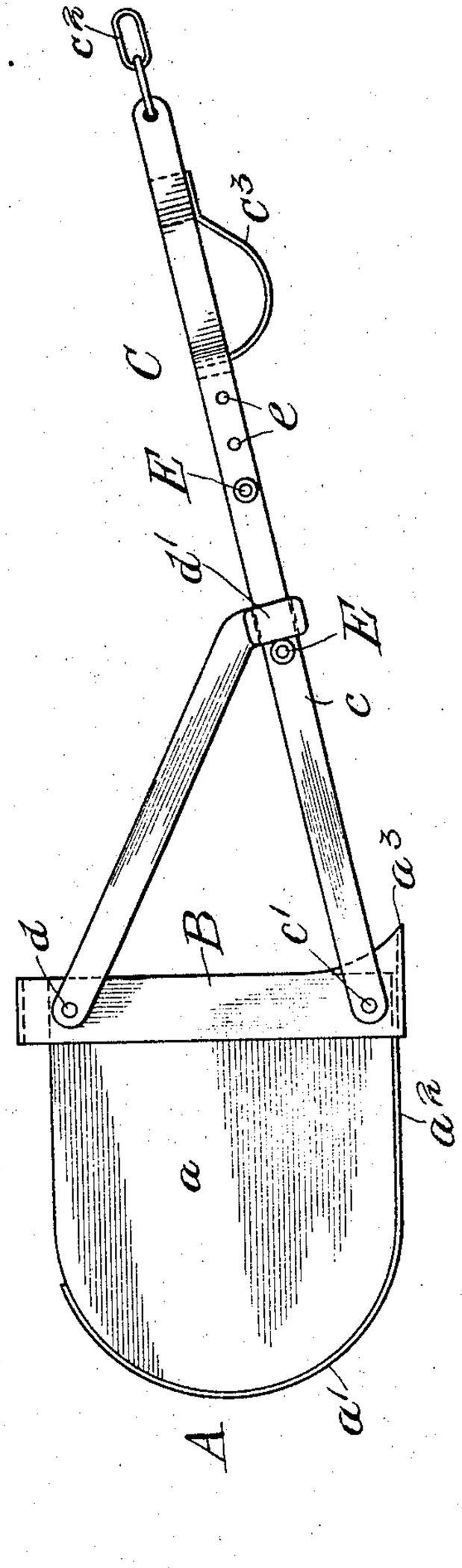

WITNESSES

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UNITED STATES PATENT OFFICE.

MORTON G. BUNNELL, OF CHICAGO, ILLINOIS, ASSIGNOR TO FREDERICK C. AUSTIN, OF CHICAGO, ILLINOIS.

DRAG-LINE-BUCKET EXCAVATOR.

1,167,146. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed March 18, 1909. Serial No. 484,290.

To all whom it may concern:

Be it known that I, MORTON G. BUNNELL, a citizen of the United States of America, and resident of Chicago, Cook county, Illinois, have invented a certain new and useful Improvement in Drag-Line-Bucket Excavators, of which the following is a specification.

My invention relates to excavating buckets of the kind commonly known as drag-line buckets. These buckets are dragged along the ground by a rope or cable, called the drag-line, and when filled are raised and carried to the place of discharge. Heretofore the arrangement has been such that the depth of the cut could not be regulated in a satisfactory manner for different kinds of soil. Also, in some cases the bucket or the drag line was liable to break when a stone or other unyielding obstruction was encountered.

The object of my invention is, therefore, the provision of a drag-line bucket of such character that the depth of cut can be regulated or varied for different kinds of soil, deep for sand or light soil and shallow for clay or other heavy soil, and of such character that it will tend to yield and rise over stones and other obstructions, thereby lessening the danger of breakage or other injury thereof.

In the accompanying drawings—Figure 1 is a plan of a bucket embodying the principles of my invention. Fig. 2 is a side elevation of the same. Figs. 3 and 4 are also side elevations of the said bucket, showing the way in which the same operates when in use.

As thus illustrated, the bucket A has flat sides *a*—*a* and a rounded back *a'*. The said back extends forward to form the bottom a^2, and has a lip or cutting edge a^3 at its forward edge. As shown, the said lip or cutting edge is formed by a separate piece of metal B secured around the bucket, to form a rectangular frame for the mouth thereof.

The bail C has its sides *c* pivoted to the bucket at *c'*, at each side thereof, and at a point back of the lip or cutting edge a^3. At its forward end the said bail has a ring or link c^2 for connection with the drag line; and just back of the said forward end the bail has a shield or shoe c^3 that is adapted to rest on the ground and slide readily along the surface thereof. A pair of braces D—D are disposed at opposite sides of the bucket, and have their upper ends pivoted to the sides of the frame B at *d*. The other ends of said braces are provided with portions *d'* that extend around and slide upon the said side portions *c* of the yoke. This sliding motion is limited by stops E, two on each side of the yoke; and by means of holes, such as *e*, in the yoke, the positions of said stops can be changed to vary the range of sliding motion of the portions *d'*, or to vary the dip and depth of cut of the bucket, depending on the character of the soil.

In use, the bucket slides along the ground, and tips forward more or less, depending on the character of the soil, as shown in Fig. 3. The pull of the drag line will cause the portions *d'* to slide forward until they strike the forward stops E, as shown in Fig. 4. This enables the lip or cutting edge a^3 to enter the ground to a certain depth. If the soil is light, then the forward stops E are set forward in one or the other of the holes *e*, thus increasing the dip of the bucket, and increasing the depth of cut. For hard ground a shallow cut and long haul are best; but for sand or light soil a deep cut and short haul are best. With my improved arrangement, the depth of cut can be regulated to suit the soil. And the slight play or back and forth motion of the portions *d'*, and the consequent tilting motion of the bucket, will often prevent breakage of the same when a stone or hard mass of earth is encountered. But the regulation of the depth of the cut is the most important consideration. I do not limit myself to the exact construction shown and described.

What I claim as my invention is:

1. An excavator drag line bucket provided with a bail pivoted on the lower front portions of the bucket, at points only slightly above the bottom of the bucket, front and rear stops on said bail, arms pivoted on the upper front portions of the bucket, and means on said arms, sliding on the bail between said stops, for limiting the back and forth tilting motion of the bucket while loading.

2. An excavator drag line bucket provided with a bail pivoted on the lower front portions of the bucket, at points only slightly above the bottom of the bucket, front and rear stops on said bail, arms pivoted on the upper front portions of the

bucket, and means on said arms, sliding on the bail between said stops for limiting the back and forth tilting motion of the bucket while loading, and a shoe for the said bail, disposed in front of said stops.

3. An excavator drag line bucket provided with a bail pivoted on the lower front portions of the bucket, at points only slightly above the bottom of the bucket, front and rear stops on said bail, arms pivoted on the upper front portions of the bucket, and means on said arms, sliding on the bail between said stops, said stops being disposed in position for limiting the back and forth tilting motion of the bucket while loading, said stops being adjustable longitudinally of the bail.

Signed by me at Chicago, Illinois, this 26th day of February, 1909.

MORTON G. BUNNELL.

Witnesses:
CLARENCE E. TAYLOR,
E. H. CLEGG.