

(No Model.)

D. URIE.

## BUCKET DREDGING MACHINE.

No. 355,488.

Patented Jan. 4, 1887.

Fig. 1.

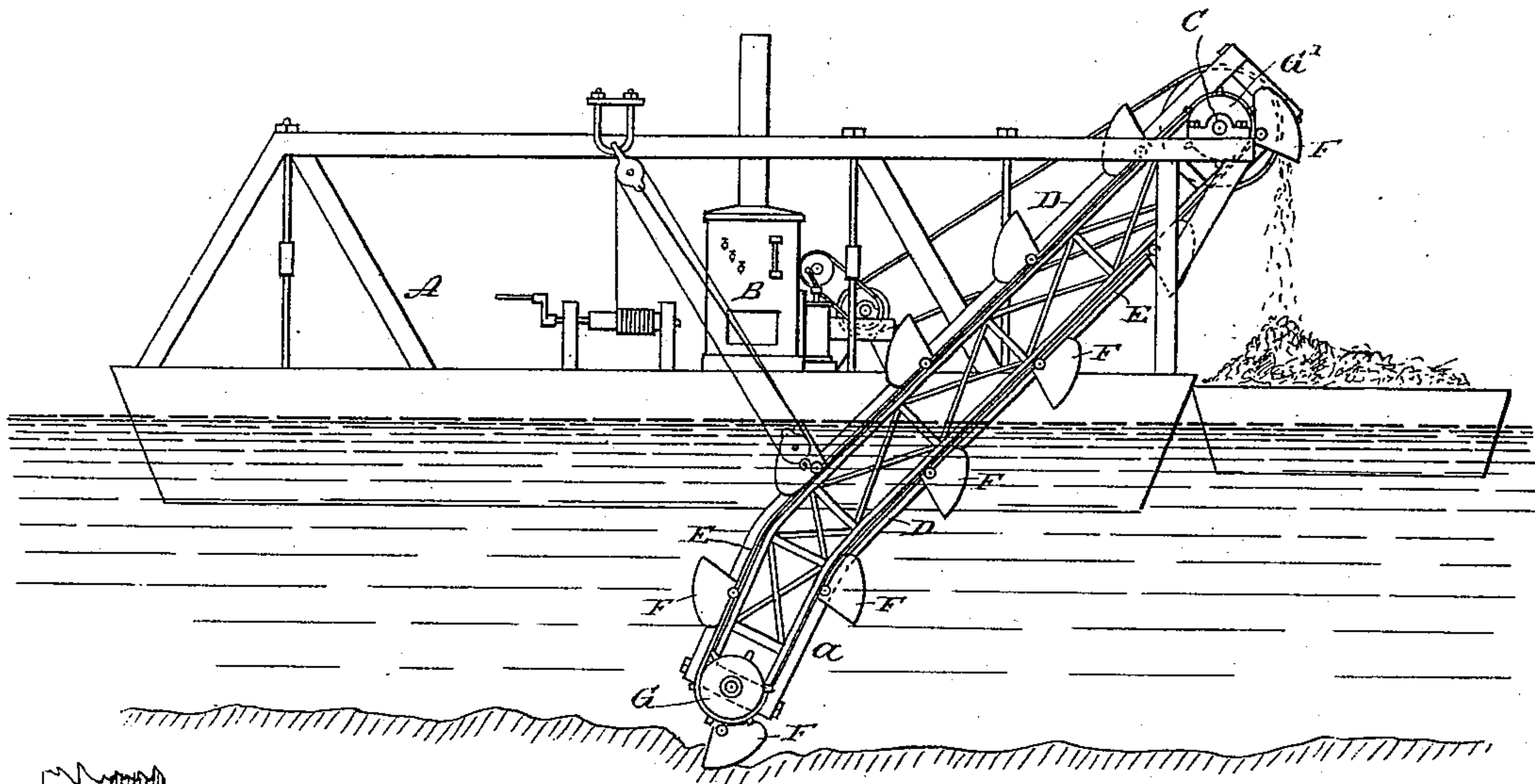
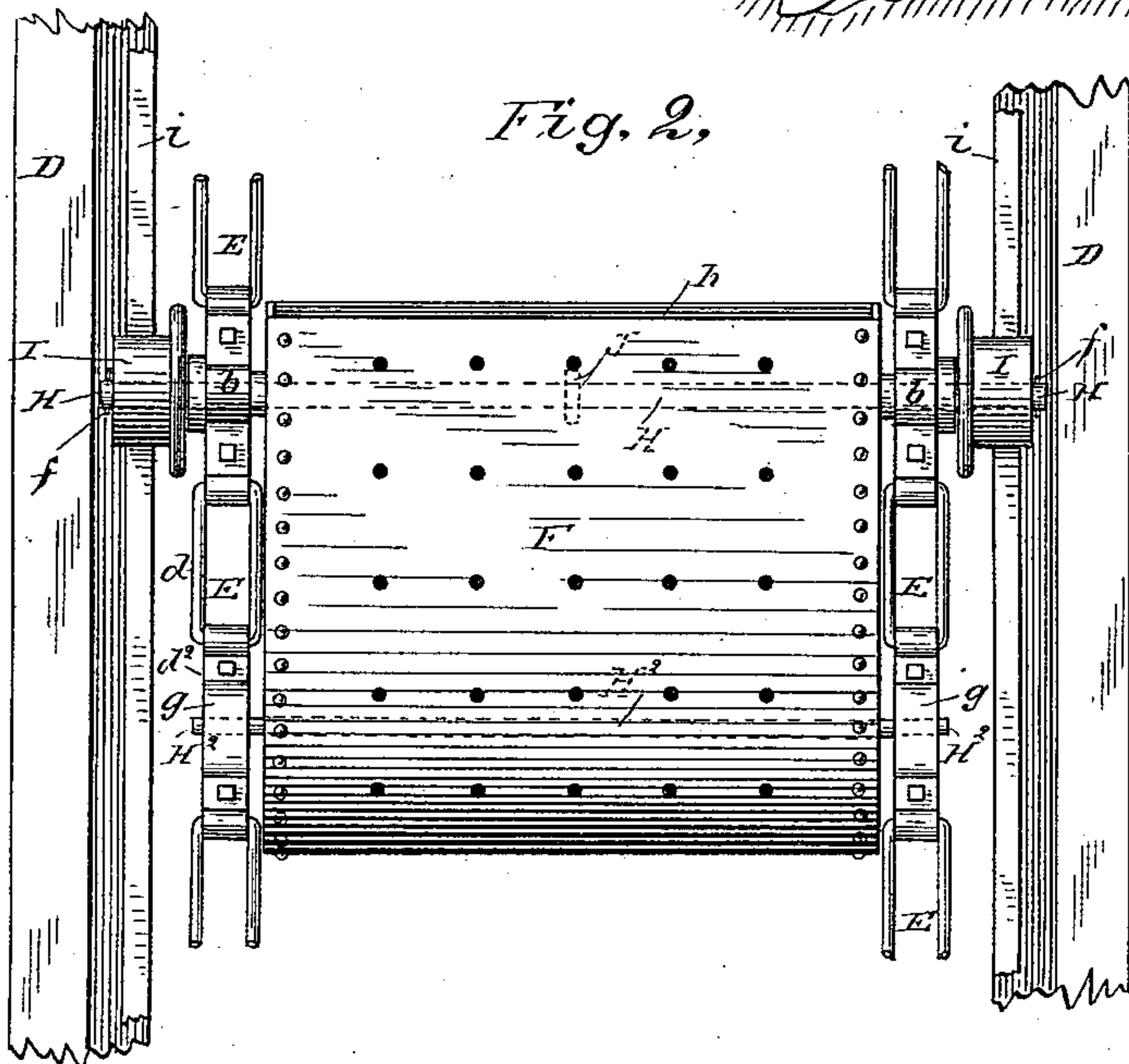
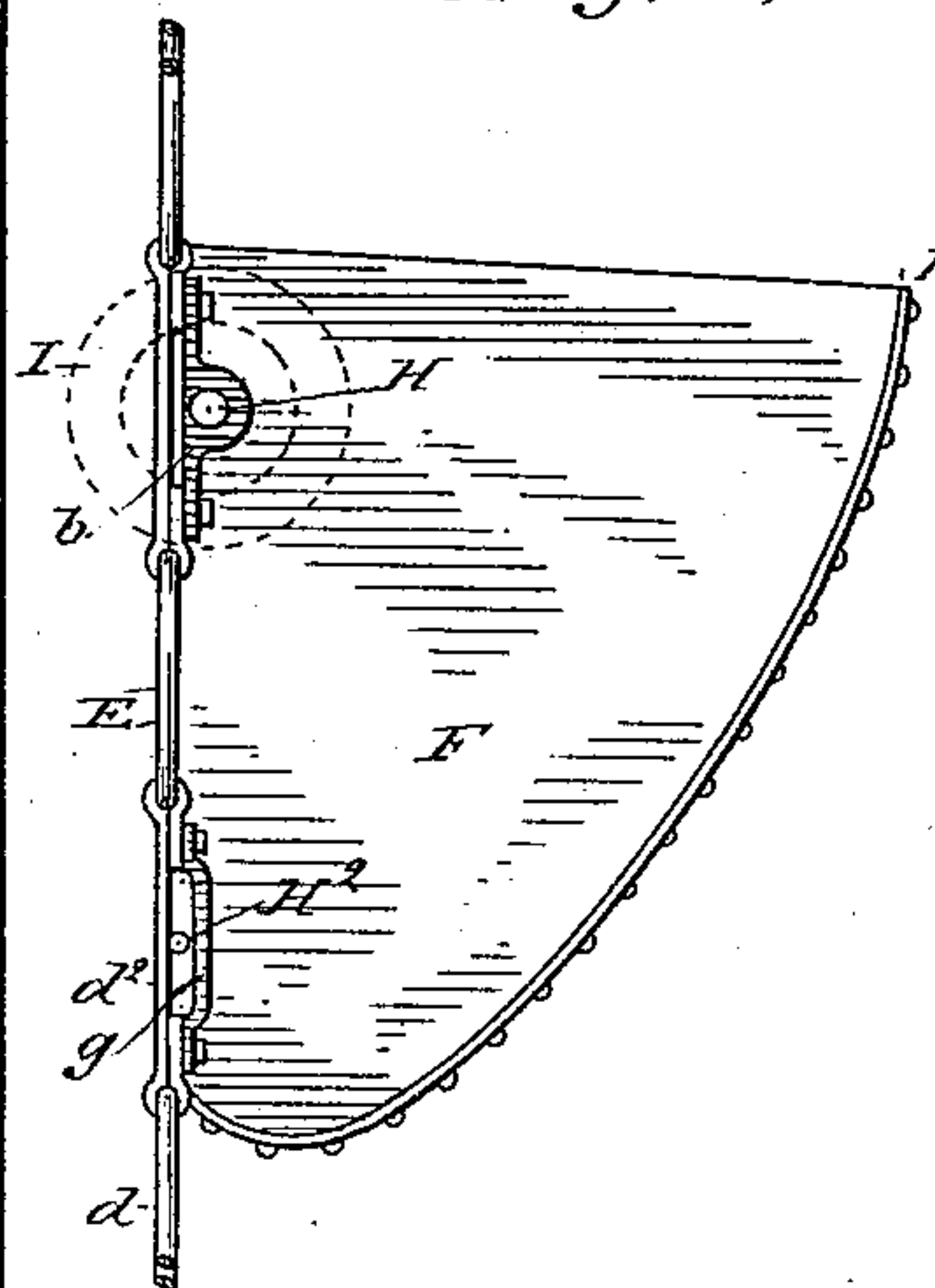


Fig. 2,



*Fig. 3.*



*WITNESSES*

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# UNITED STATES PATENT OFFICE.

DAVID URIE, OF KANSAS CITY, MISSOURI.

## BUCKET DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 355,488, dated January 4, 1887.

Application filed October 27, 1885. Serial No. 181,082. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID URIE, of Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful  
5 Improvements in Bucket Dredging-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the  
10 same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

The object of my invention is, first, to provide an efficient means of attaching the buckets to the chain or endless belt in such a manner as to arrive at an easy and proper self-adjustment of the same to the latter whenever each of the buckets passes over the end drums or  
20 tumblers.

My invention relates, secondly, to the novel and improved construction of the ladder or bucket-carrying frame, whereby each bucket, in its downward movement, and at that point  
25 where its scooping action takes place, becomes isolated from the rest of the buckets, so that but one bucket shall embed itself into the soil at a given time, thereby giving the soil sufficient time to accumulate again in the channel dug out by each preceding bucket for the action of the next following one.

My invention relates, thirdly, to the novel construction of the scoop-bucket itself, whereby I am enabled, in connection with the improved  
35 forms of the aforementioned features, to dig and elevate a larger quantity of soil with each bucket than by means of the present system of dredging.

In the accompanying drawings, Figure 1 illustrates, in side elevation, my improved form of dredging-machines. Fig. 2 shows an enlarged view, in front elevation, of a scoop-bucket with part of endless chain; and Fig. 3 is a side elevation of Fig. 2.

45 A is the dredging-vessel of any desired form.

B is the boiler, with engine, which latter transmits power by means of belt or gearing to the driving-shaft C.

50 D is the bucket ladder, made of wood or iron, with king-post, transverse trusses, struts, and tie-bolts sufficiently strong to sustain the load of the buckets with their contents.

E is the endless belt or chain, to which the buckets F are attached in a certain manner, more fully described hereinafter. 55

The ladder is raised or lowered in the usual way by means of chains or ropes passing around a barrel and working in sheaved blocks, which are suspended from the timber-framing. These ladders or bucket-carrying frames D have  
60 heretofore been constructed on a straight unbroken line from end to end. Part of my improvement consists in breaking this straight line, and letting the same assume, at or near its lower extremity, a steeper incline, so as to approach to an almost vertical position, as shown at *a* in Fig. 1. The buckets F, which follow the outlines of the bucket-ladder D, will thereby be kept away from the soil until such time when the same arrive at the lower barrel, G, 70 and, rounding the latter, will dig into the soil and commence its upward course before the next following bucket arrives at the same spot. This enables the flow of the under-current of water to rush into the dug-out channel sufficient material again in order to allow the following bucket to scoop out an equal amount of soil. This feature is especially essential where the soil consists of sand, mud, or other shifting material. 80

In the old system of dredging more than one bucket is allowed simultaneously to approach the soil by reason of the more horizontal position of the buckets at their time of action upon the soil. This very often causes the filling of one bucket while a certain number of the following buckets are left nearly or quite empty for want of accumulating material in the dug-out channel. 85

In case the river or harbor bed is very shallow and the lower end of the bucket-ladder has to be raised considerably more than in the accompanying drawings, perhaps two of the buckets may work upon the soil at the same time, while in the present system of dredging-machines a far larger number will be in this position, thereby diminishing the full capacity of each bucket, besides straining the driving machinery, by reason of the increased friction and subjecting it to considerably more wear 100 and tear.

The buckets F are made in the usual way, from boiler-iron riveted together, and are each fastened to the endless chains by means of a



bar or shaft, H, which traverses the bucket F from side to side. These shafts H are fixed in journals *b* to the chain E, which latter is made of links *d d*, as illustrated in Figs. 2 and

5 3. Guide or running rollers I are keyed or otherwise attached to the outer extremities of the shaft H and run upon rails *i*, fastened to the carriage-way of the bucket-ladder D. A staple, J, serves to help connect the shaft H to  
10 the buckets F, as shown. By removing one of the end keys or plugs *f* in the shaft H the latter can at will be withdrawn, and thereby enable the workman to repair or substitute new buckets in a comparatively short time.

15 A second shaft or bar traverses each bucket at the lower end of the same. The ends of this bar project sufficiently long to engage with a slot or opening formed between the bucket-chain and the bracket *g*, which is  
20 attached to one of the links *d*<sup>2</sup>. The object of this arrangement is principally to allow of sufficient self-adjustment of the buckets to the chain at the time that the buckets round the barrels G G. The buckets have heretofore  
25 been rigidly attached to the respective links of the chain, which causes a strain and a good deal of wear to this part of the machinery, besides increasing the friction and consequent loss of power.

30 The buckets F are provided on their front side with apertures equally distributed, for the purpose of emitting the water from the soil in the buckets.

The gentle curve on the front of the buckets  
35 downwardly from the mouth to the base serves for the purpose of presenting the scraping-edge *h* to the soil when in action.

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

1. In a bucket dredging-machine, a bucket-ladder having its lower end set at an angle to the upper portion, in combination with endless belts or chains to which the buckets are attached by means of a transverse bar, H, 45 which is journaled in bearings on the chains, and the second transverse bar, H<sup>2</sup>, the projecting ends of which engage with the slot or groove placed upon the endless chains, as shown and described.

2. In a bucket dredging-machine, a bucket-ladder or frame consisting of sides framed together and made straight from the top downward for the greater portion of their length, and having their extreme lower ends set at an 50 angle with the main portion of the said ladder, in combination with rails secured to the carriage-way and obliging the descending part of the bucket-chain to follow the outline of the said ladder, so that the buckets may approach 60 the soil at a steeper angle, substantially as and for the purpose set forth.

3. In a bucket-dredging machine, the combination of buckets F, provided with staples J, the shafts H, passing through the said buck- 65 ets and provided with rollers on each end, the bars H<sup>2</sup>, also passing through the said buckets, and the endless chains E, provided with brackets which form slots for the ends of the said bars, substantially as and for the purpose set 70 forth.

In testimony that I claim the foregoing as my own I hereto affix my signature in presence of two witnesses.

DAVID URIE.

Witnesses:

GEO. H. ENGLISH,  
LINCOLN ALBERTSON.