

(No Model.)

2 Sheets—Sheet 1.

J. KENNEDY.
ELEVATOR DREDGING MACHINE.

No. 279,570.

Patented June 19, 1883.

Fig. 1.

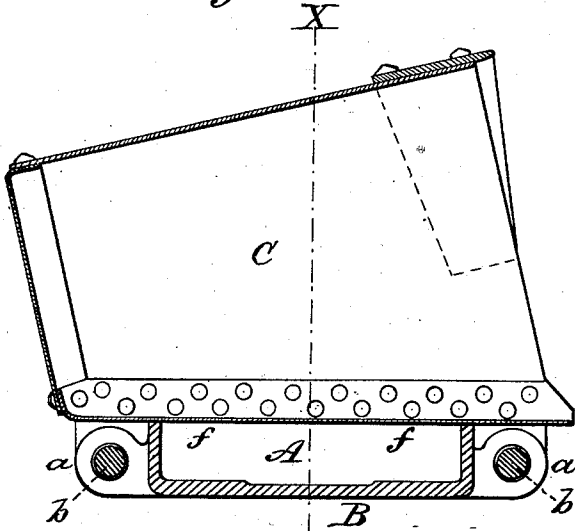


Fig. 2.

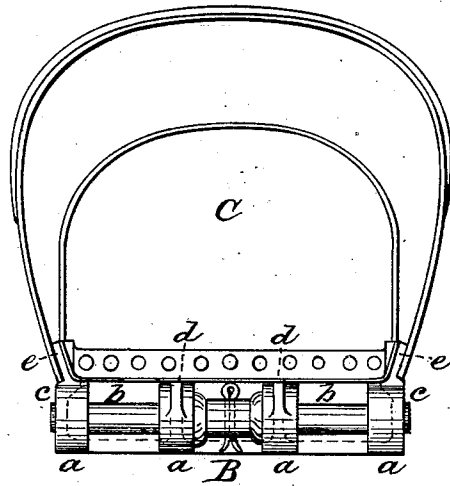


Fig. 3.

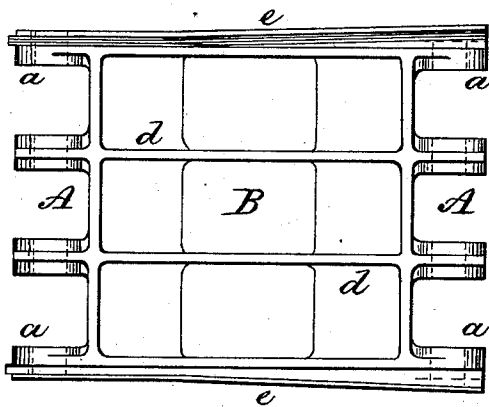
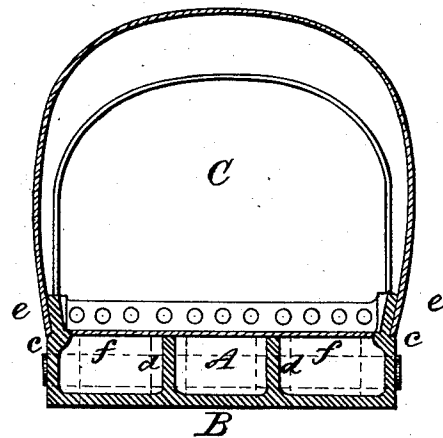


Fig. 4.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

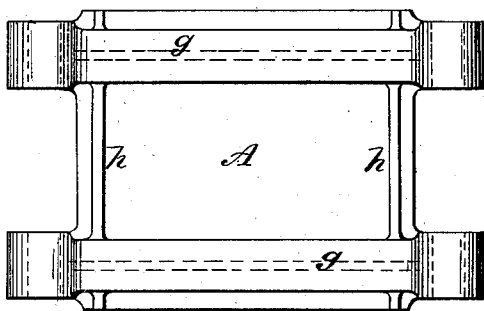


Fig. 6.

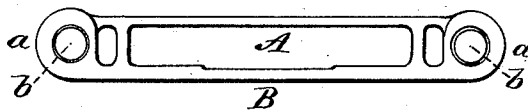


Fig. 7.



Fig. 8.

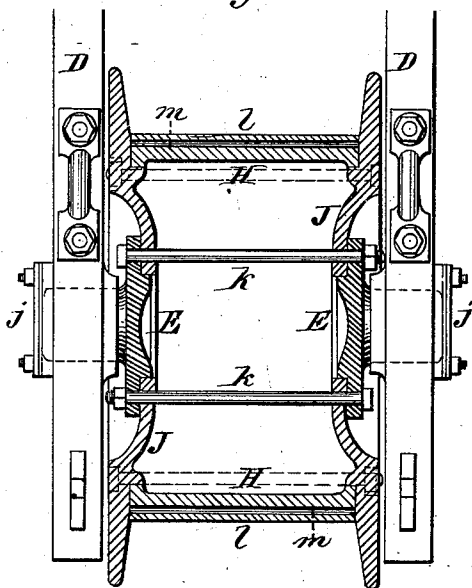
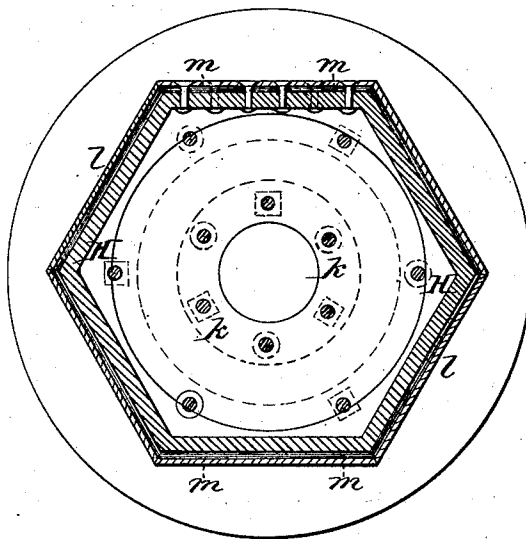


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN KENNEDY, OF MONTREAL, QUEBEC, CANADA.

ELEVATOR DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 279,570, dated June 19, 1883.

Application filed August 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN KENNEDY, of the city and district of Montreal, in the Province of Quebec and Dominion of Canada, civil engineer, have invented certain new and useful Improvements in Elevator Dredging-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings.

My invention relates to improvements in the construction of buckets, intermediate links, and tumblers, in that description of dredging-machines in which the material is excavated and elevated by means of an endless chain of buckets and intermediate links passing over two tumblers, one (to which the power is generally applied) being situated at the upper and the other at the lower end of a long swinging frame or ladder. By the ordinary construction hitherto in use, each of these buckets, which constitutes one composite link of the chain, is mounted upon a steel or iron base or bottom having a series of jointed bars or ribs projecting downward. Consequently the faces of the tumbler in its revolution impinge only upon a portion of the actual bottom of the buckets, thereby causing a very deleterious wear and tear upon all the surfaces when brought into contact with the faces of the tumblers. The intermediate links are also usually formed of a pair of separate and independent jointed bars fitted to work between those of the buckets. Thus the bearing-surfaces both of the links and tumblers are subject to much useless and hurtful waste and loss of metal.

The objects of my present improvements are, first, to provide a full bearing over the entire surface of the tumbler and bucket-bottom for each of the buckets, and also for the intermediate links; secondly, to protect the faces of the tumblers from the unequal and destructive grinding and cutting action of the links; and, thirdly, to effect an important economy by providing for the renewal of parts liable to be worn out, and by reducing the weight of the bucket-bottoms and tumblers relatively to their strength. I attain these objects by constructing the bucket-bottoms, and also the intermediate links and tumblers, in the manner hereinafter to be described, and which is illus-

trated by the accompanying drawings, in which—

Figure 1 is a vertical section, and Fig. 2 an end view, of one of my improved buckets complete. Fig. 3 is a plan of the bucket-bottom, and Fig. 4 a transverse section on the line X Y in Fig. 1. Fig. 5 is a plan, Fig. 6, a longitudinal elevation, and Fig. 7 a transverse section, of one of the intermediate links. Figs. 8 and 9 show details of the construction of my improved tumbler, chiefly with reference to the lower tumbler.

In these drawings similar letters indicate like parts throughout the several views.

Letter A is the bucket-bottom, which is preferably made of cast-steel, having the link-eyes *a a* for the reception of the link-pins *b b*, cast upon it at either extremity. It is also formed with the solid bottom B, the sides *c c*, middle ribs, *d d*, and flanges *e e*, for attaching the bucket-body C, the whole being in one piece and forming a species of hollow box-girder, the lower surface of which is a plain rectangular solid plate corresponding with the face of the tumbler, which is thus provided with the greatest possible amount of bearing-surface to resist the wearing and grinding action in working, and consequently to render the whole apparatus more durable and efficient.

By the construction heretofore generally in use the plate B, or its equivalent, forms the upper member or flange of this composite girder and at the same time the actual bottom of the bucket or receptacle for the material excavated; but by my improved mode of construction this plate is transferred to the lower side, so as to give the requisite strength and wearing-surface with a smaller amount of material.

In order to obviate any tendency to the accumulation and adhesion of mud and clay in the bucket-bottom A and between the middle ribs, *d d*, a false bottom, of sheet iron or other suitable material, is attached to the top of the main bucket-bottom A; or, if preferred, the spaces between the ribs may be filled flush with wood or other suitable material. The intermediate links, as shown in Figs. 5, 6, and 7, are constructed in a similar manner and for similar purposes, only modified to suit their peculiar functions, and by reference to the same letters as above its construction will be

readily understood. The upper flanges, *g g*, and ribs *h h* are introduced for the purpose of giving the requisite rigidity, which in the bucket-links is supplied by the bucket-bottom *f* and the body *C*.

In Figs. 8 and 9 is shown my improved construction of tumbler, as more specially designed for the lower tumbler, but which may also, if convenient, be applied in some of its features to the construction of the upper tumbler.

Letters *D D* indicate the ends of the ladder or swinging frame, provided with suitable bushes or bearings, *j j*, for the reception and adjustment of the gudgeons *E E*, upon which the tumbler is fitted to rotate. The gudgeons *E E* are formed in separate pieces from the body of the tumbler, to which they are attached by the bolts *k k*, or otherwise, the object of this arrangement being to facilitate the renewal of the gudgeons *E E* and bushes *j j*, which are very liable to be worn away by the action of the machine.

The outer casing or shell, *H*, of the tumbler is fixed to the end disks, *J J*, by bolts or rivets, and is sheathed externally over its entire surface with steel plates *l l*, riveted or bolted to the casing *H*, layers of oak, or other suitable partially elastic but indestructible material, *m m*, being interposed between the steel and cast-iron, for the purpose of facilitating the construction by obviating the necessity of planing the faces of the tumbler, and also for relieving the rivets or bolts from the jarring and concussion caused by the working of the machine.

I am aware that prior to my invention elevator-dredging-machine buckets have been made with bottoms formed in one piece with the necessary jointed links, &c., and that various means have been proposed and adopted for reducing the wearing action and for replacing the parts worn. I am also aware that tumbler-faces have been in use prior to my invention either wholly or partially protected by steel plates, and that tumblers have been constructed with end disks and casings or shells bolted together in the manner above described. I do not, therefore, broadly claim any of these features, nor do I, on the other hand, restrict my claims to the particular forms

herein described, and represented in the drawings, so long as the peculiar features of any part of my invention are retained; but

What I do claim as my invention, and desire to secure by Letters Patent, is as follows, viz:

1. In an elevator dredging-machine where each bucket forms one link in an endless chain propelled by tumblers, a bucket-bottom formed with a solid and continuous plane plate on the lower side of the link-eyes, and having sides, ends, and ribs extending upward to the body of the bucket, the whole being formed in one piece, substantially as shown, and for the purposes specified.

2. In an elevator dredging-machine, in combination with a bucket-bottom having a solid and continuous plane plate on the lower side of the link-eyes, and having sides, ends, and ribs extending upward to the body of the bucket, a false bottom attached to its upper side and to the body of the bucket, substantially as and for the purpose specified.

3. In an elevator dredging-machine, a composite intermediate link for the bucket-chain, having two or more ribs for the link-eyes, connected together at the base by a solid and continuous plane plate with suitable strengthening-ribs, the whole being formed in one piece, substantially as and for the purposes specified.

4. The combination, with the side disks of the tumbler, of the removable gudgeons *E E*, secured in the centers of said disks by the through-bolts *k k*, or by ordinary bolts or rivets, as shown and described.

5. In an elevator dredging-machine having tumblers formed with any number of plane faces, the combination of layers of oak *m m*, or other partially elastic and durable material, with the outer sheathing-plates of steel, *l l*, the layers *m m* being interposed between the sheathing-plates *l l* and the shell of the tumbler *H*, and the whole riveted or bolted together, substantially as and for the purposes specified.

JOHN KENNEDY.

Witnesses:

GILBERT FRANCIS WANLESS,

Of the City of Montreal, Merchant.

F. GRIFFIN,

Of the City of Montreal, Gentleman.