No. 622,637. Patented Apr. 4, 1899.

W. S. RUSSELL.

ELEVATOR DREDGE.

(Application filed Nov. 14, 1898.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

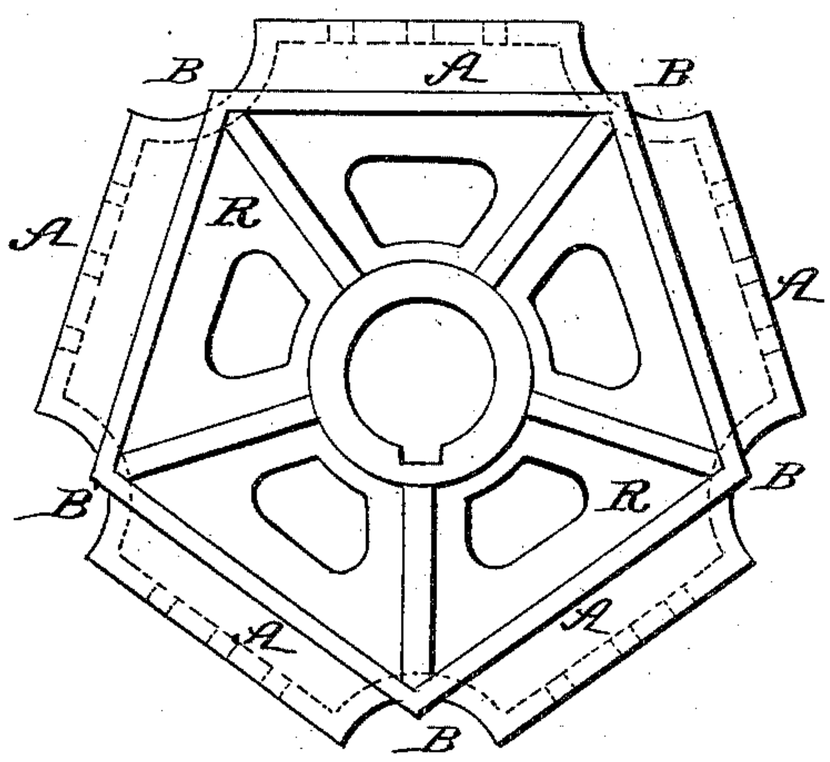

Fig. 2.

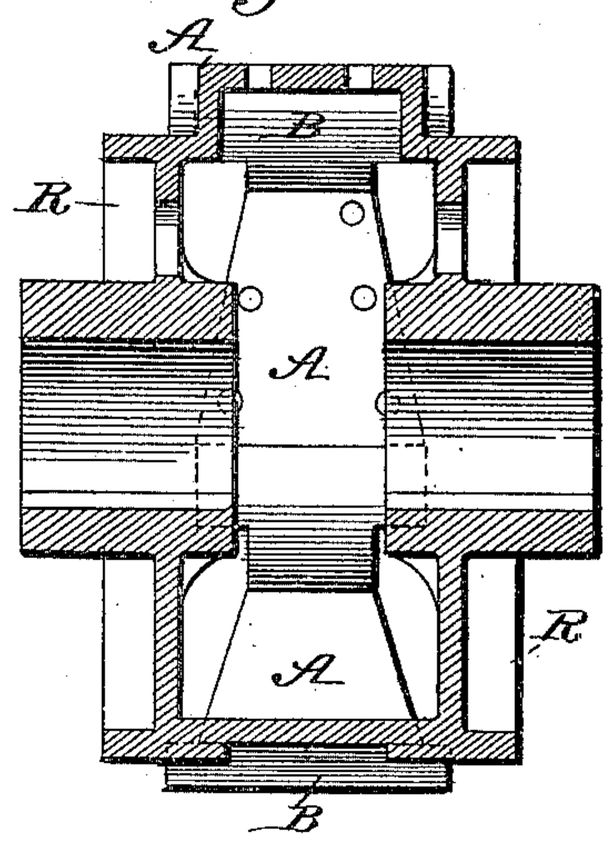

Fig. 3.

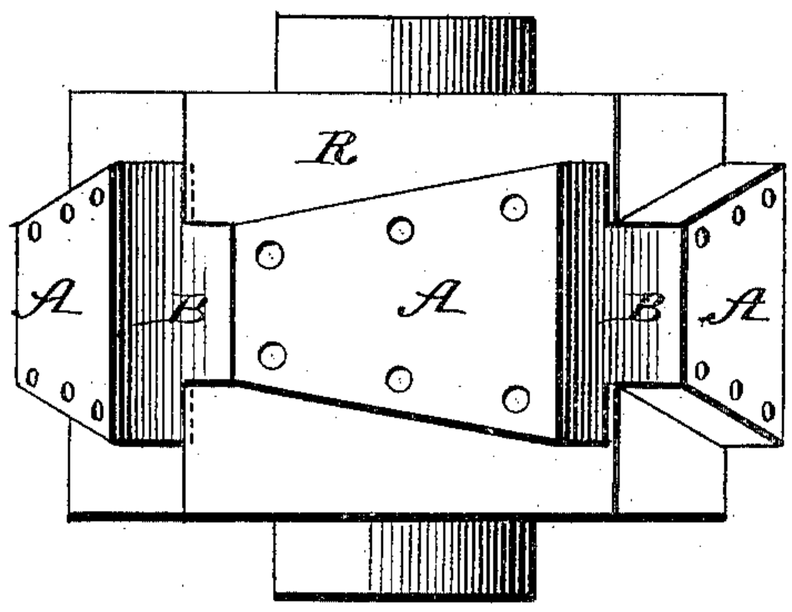

Fig. 4.

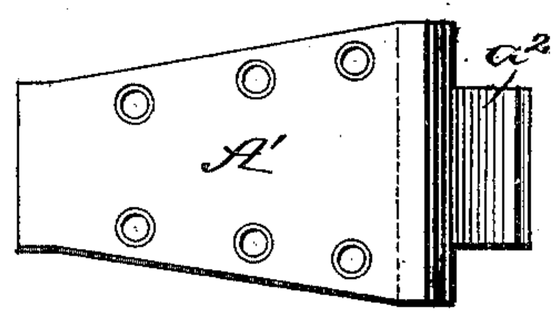

Fig. 5.

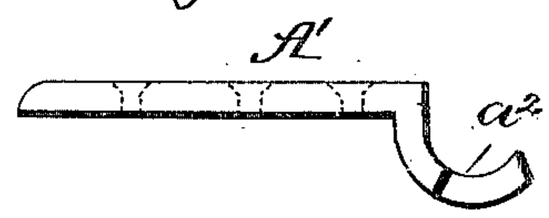

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Fig. 6.

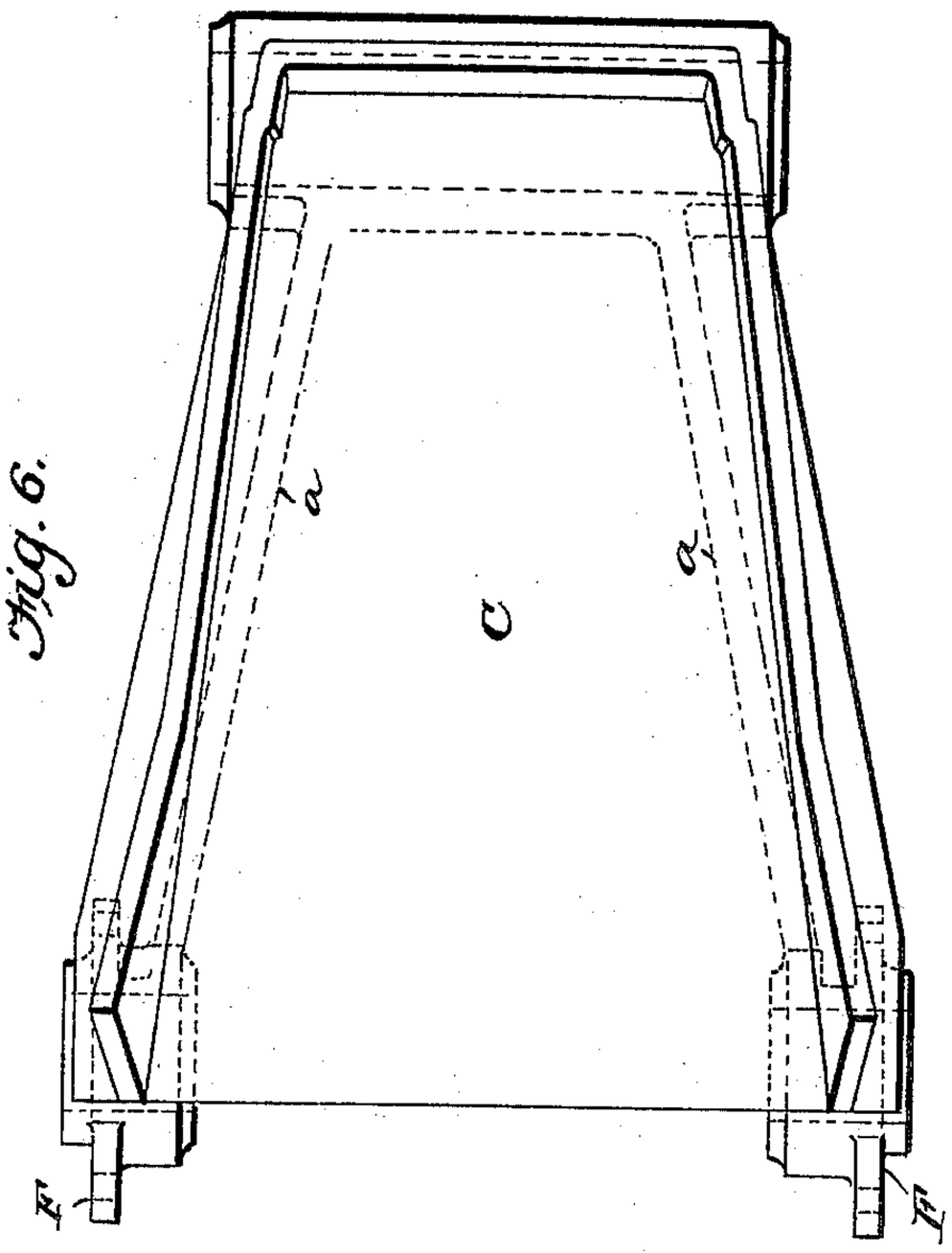


Fig. 6a.

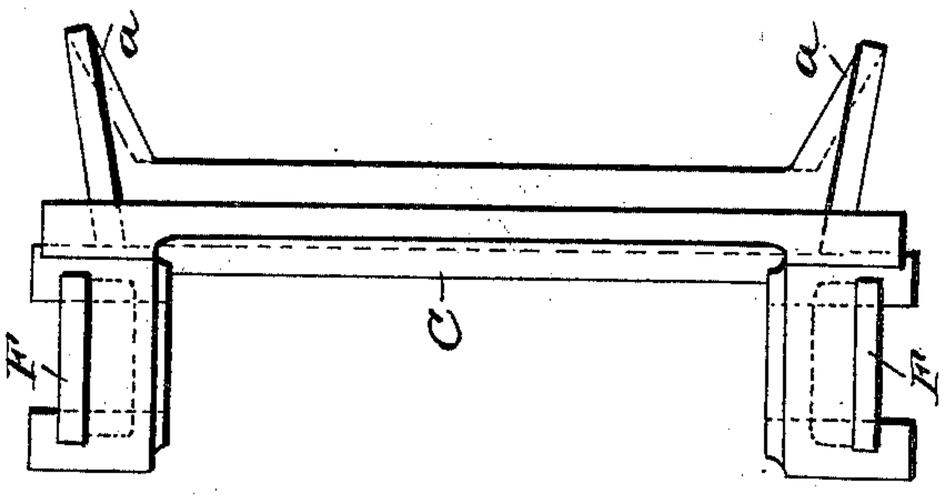
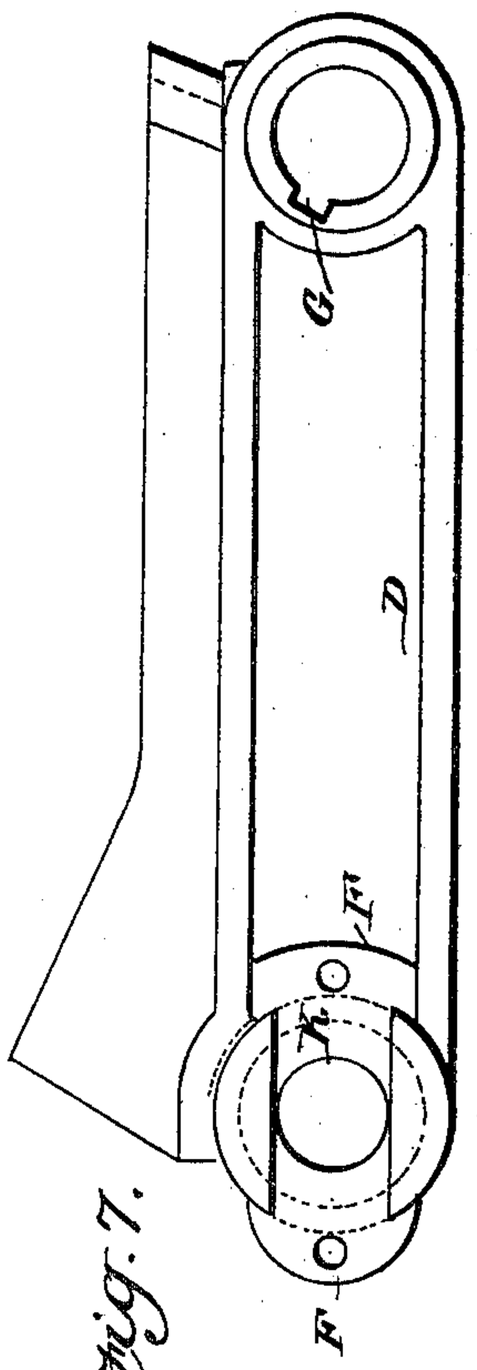


Fig. 7.



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(No Model.) 4 Sheets—Sheet 3.

Fig. 8.

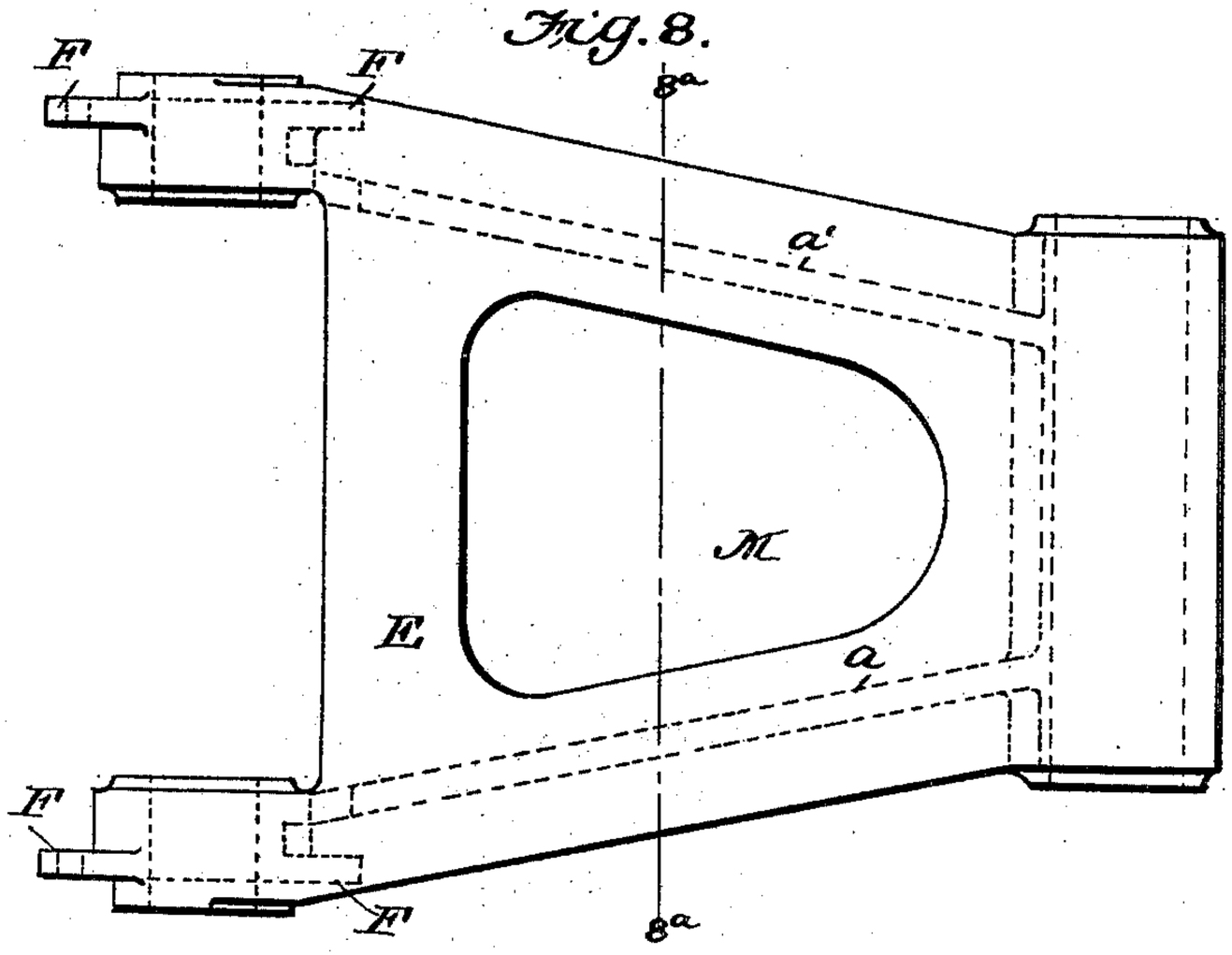


Fig. 8a.

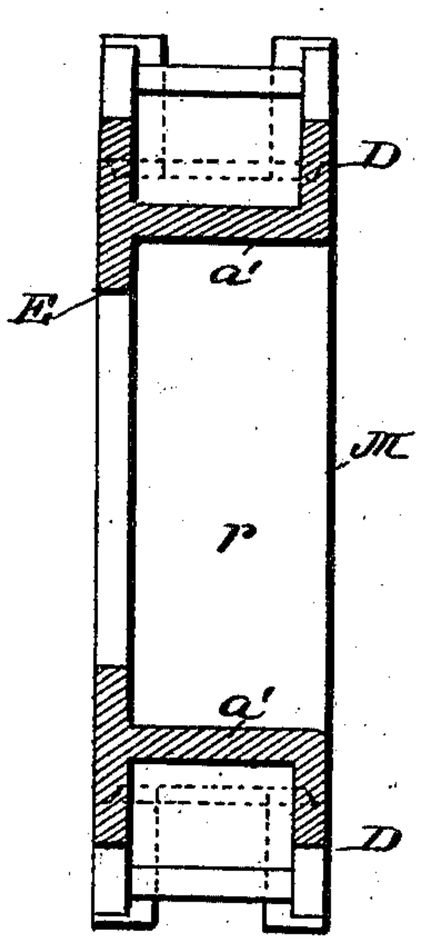


Fig. 9.

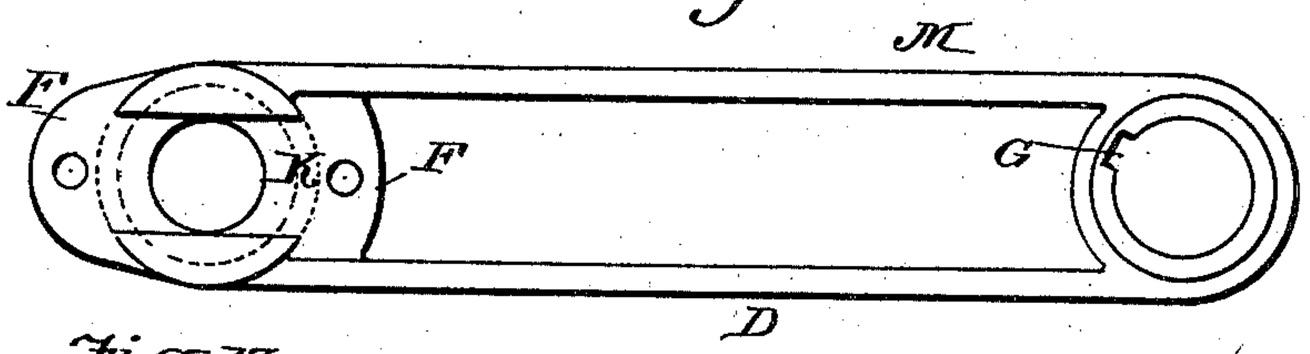


Fig. 10.

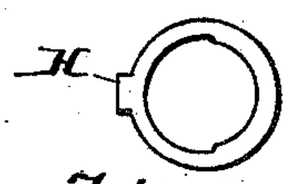


Fig. 11.

Fig. 13.

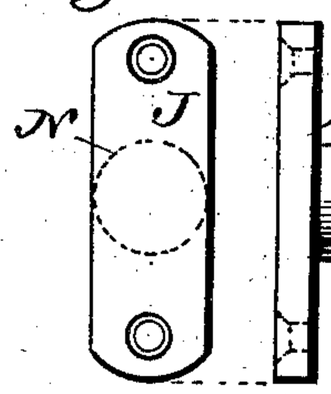
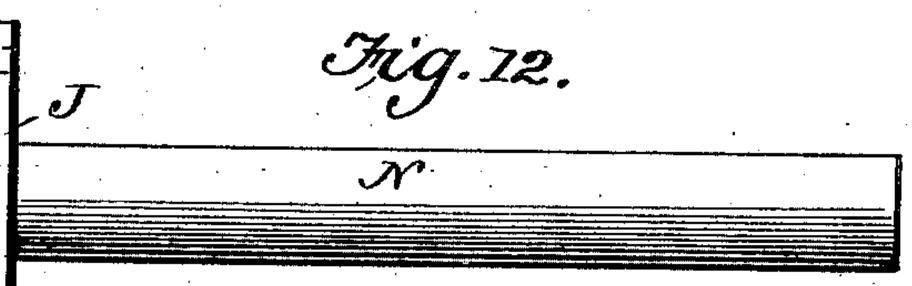


Fig. 12.



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ELEVATOR DREDGE.

(Application filed Nov. 14, 1898.)

(No Model.)

4 Sheets—Sheet 4.

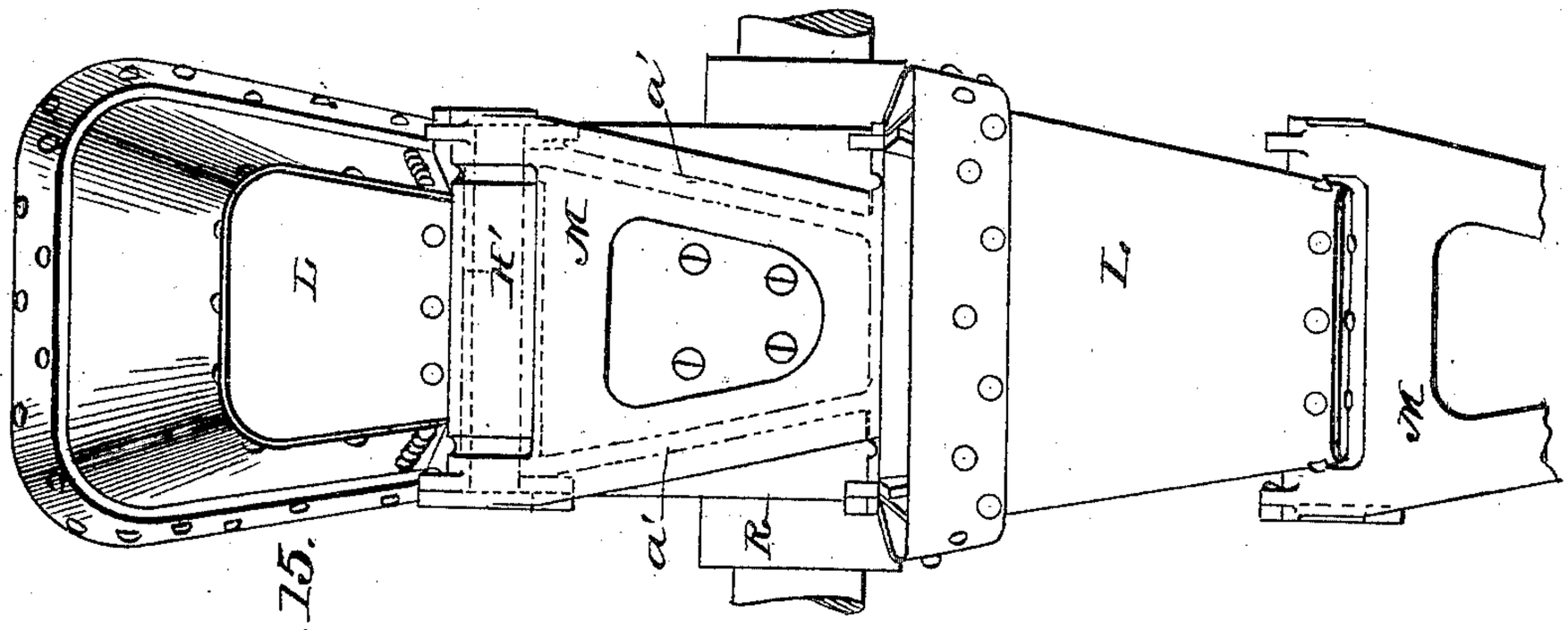

Fig. 15.

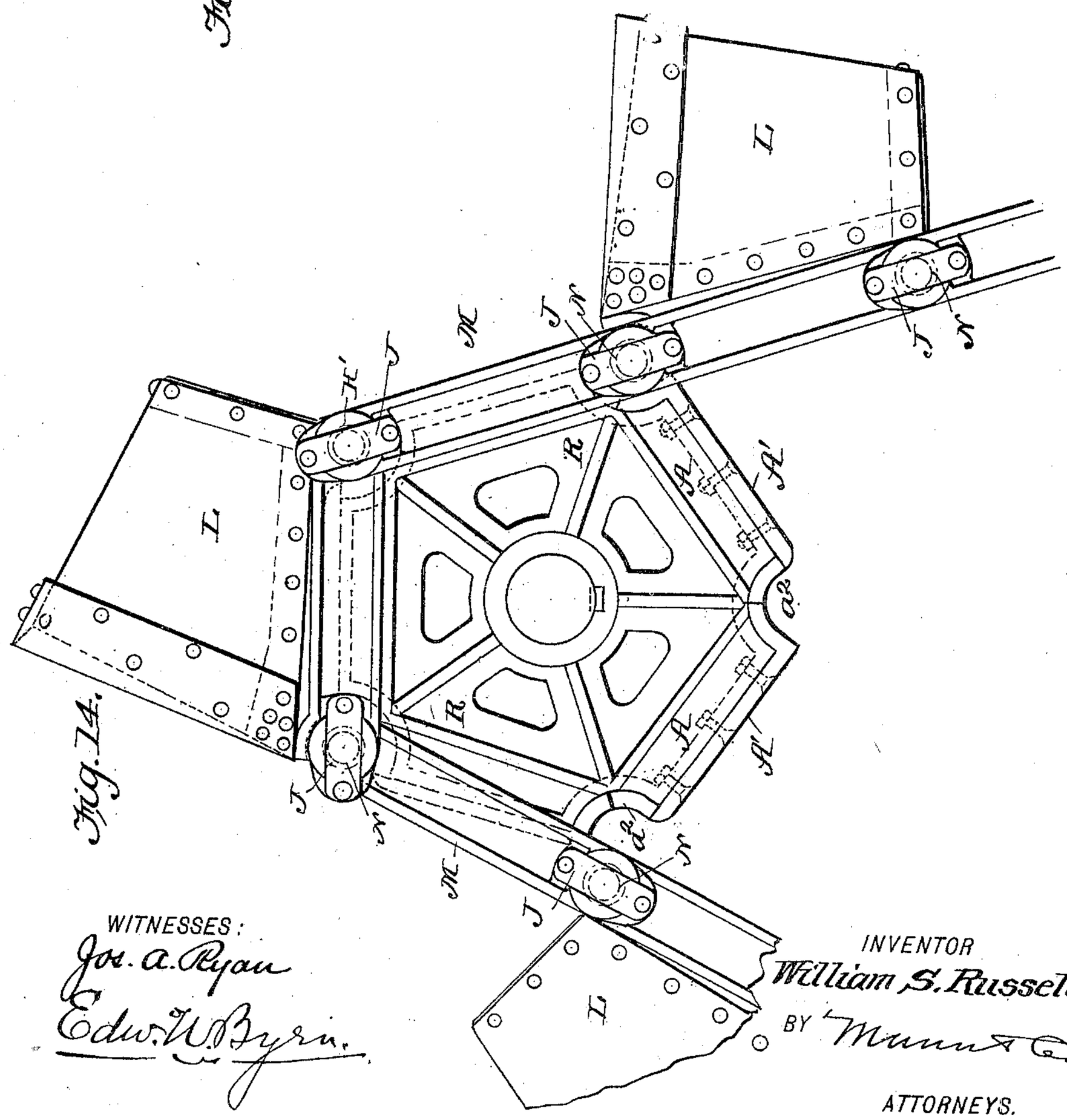

Fig. 14.

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UNITED STATES PATENT OFFICE.

WILLIAM S. RUSSELL, OF TOLEDO, OHIO.

ELEVATOR-DREDGE.

SPECIFICATION forming part of Letters Patent No. 622,637, dated April 4, 1899.

Application filed November 14, 1898. Serial No. 696,411. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. RUSSELL, of the city of Toledo, in the county of Lucas and State of Ohio, have invented new and useful Improvements in Elevator-Dredges, of which the following is a complete description, reference being made to the annexed drawings, which form a part of this specification.

My invention relates to the upper tumbler and chain of buckets used to raise the material from below the dredge and discharge the same into a hopper or other receptacle provided for the purpose.

My invention consists in the peculiar construction and arrangement of the upper tumbler, in the peculiar construction and arrangement of the wearing-plates for same, in the construction and arrangement of the buckets and links, which form an endless chain passing over the upper tumbler, in the construction and arrangement of the bushing inserted into the buckets and links, and in the construction and arrangement of the pins which connect the buckets and links together with a hinge-joint, as hereinafter fully described.

In the accompanying drawings, Figure 1 is an end elevation of the upper tumbler. Fig. 2 is a section of the upper tumbler, taken through the axis. Fig. 3 is a side view looking down upon the face of the upper tumbler, showing the raised blocks or saddles A, which are cast solid upon each of the several sides and upon which the wearing-plates are bolted. Fig. 4 is a plan of the wearing-plates. Fig. 5 is a side elevation of the same. Fig. 6 is a plan of the bottom wall of the bucket; Fig. 6^a, an end view of the same. Fig. 7 is a side elevation of the same, showing straight side and lugs on front or short hubs. Fig. 8 is a plan of the link connecting the buckets, and Fig. 8^a a transverse section of the same. Fig. 9 is a side elevation of the link, showing lugs on the short front hubs. Fig. 10 is an end view of the bushing. Fig. 11 is a side view of the same. Fig. 12 is a plan of the hinge-pin with T-head. Fig. 13 is an end view of the same. Fig. 14 is a side elevation of all the different parts of this invention as herein described assembled and put together as in working order. Fig. 15 is a face view of buckets and links complete and in place on the tumbler.

The object of this invention is to secure a combination of the different parts herein described for the purpose of elevating material of any description which may be dug and contained in the chain of buckets aforesaid, that the several parts shall be strong, simple, efficient, durable, and an improvement on elevators heretofore used for the purpose.

Referring to Fig. 1, the upper tumbler R is keyed onto a heavy shaft and turned by a large chain-sprocket or otherwise.

The raised blocks or saddles A, Figs. 1 and 3, are fitted with wearing-plates A′, Fig. 4, which are bolted or riveted upon them, as seen in Fig. 14. These blocks or saddles project into a recess *r*, Fig. 8^a, on the under side of buckets and links, Figs. 6 and 8, and between the flanges *a a* and *a′ a′*. These saddles are wide at one end and narrow at the other, conforming to the recesses in the buckets and links. They are of trapezoidal shape and somewhat narrower than the flat faces of the tumbler and are centrally formed thereon, so as to leave a shoulder on the flat face of the tumbler upon each side for the side bars of the chain links and buckets to rest upon. The pull is at the wide end of the blocks or saddles.

Between the saddles A are hollow seats B, Fig. 1, into which the hubs of the buckets and links rest. The wearing-plates A′, Figs. 4 and 5, have curved or hollow-shaped ends a^2, which fit the hollow tumbler-seats B, and the round hubs of buckets and links fit into said hollow ends a^2, as seen in Fig. 14. The solid bottoms C of the buckets (see Fig. 6) extend straight from the top of one hub to the tops of the other hubs, and the lower flanges D, Fig. 7, are of same length. Said bottoms and flanges rest upon the top of wearing-plate A′ and face of the tumbler, respectively. The links M, Fig. 8, alternate with the buckets L, as seen in Fig. 15. The plates E on links M, Fig. 8, extend straight from the top of one hub to the tops of the other hubs. The lower flanges D, Fig. 9, are of the same length, and said plate and flanges rest upon the top of the wearing-plate A′ and face of tumbler, respectively. This reduces the wear of the tumbler, bucket-frame, and link to a minimum.

The lugs F F, Figs. 6, 7, 8, and 9, are for the purpose of riveting or bolting the T-heads

J of the hinge-pin N to same, as seen in Figs. 14 and 15, for coupling the alternating links and buckets. The recess K, Figs. 7 and 9, is to receive the T-head of pin and hold it solid in place. The groove G in the long hub of bucket and link, Figs. 7 and 9, is for the purpose of holding the bushing H′, Fig. 10, in place and preventing it from turning. This bushing, which may be in one or more pieces, is made with a rib H, which fits into the groove G, Figs. 7 and 9, to prevent its turning. These bushings are made of hard material and are to prevent the wearing of the long hubs in the joints of the buckets and links. One side of said bushing is made thicker and of a smaller internal circumference than the other, as seen in Fig. 10, to resist wear.

The hinge-pin N, Fig. 12, is made with a double or T-head J to give a strong fastening and so that when the pin is worn on one side it may be turned around and wear on the opposite side, thus making it to last twice as long. It may also be turned end for end in the short hubs, if so desired.

In the general view, Figs. 14 and 15, the buckets L, links M, pins N, and bushings H′ are shown complete and form a chain around the upper tumbler R, which is fitted with the wearing-plates A′, fastened on its several sides.

The shell or body of bucket L is made of boiler-plate, riveted to bucket-frame, and provided with a mouthpiece riveted around the open end of bucket.

The blocks or saddles A of the tumbler may be square, rectangular, or tapered, as shown, and either cast solid or made separately and bolted on.

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

1. A tumbler for an elevator-chain having flat polygonal faces, with flat projecting blocks on said faces adapted to be received into recesses in the sections of the chain said blocks being centrally located on said faces, and of less width than the same, so as to leave shoulders on each side substantially as and for the purpose described.

2. A tumbler for an elevator-chain having flat polygonal faces with flat projecting blocks on said faces, and curved seats B at the angles between the faces, said blocks being of trapezoid shape centrally located on said faces, and of less width than the same, so as to leave shoulders on each side substantially as and for the purpose described.

3. A tumbler for an elevator-chain having flat polygonal faces with flat projecting blocks on said faces and curved seats at the angles between the faces; in combination with detachable wearing-plates having flat faces fitting the flat faces of the tumbler-blocks, and curved overlapping ends fitting into and locking against the curved seats of the tumbler and adapted to receive the recesses and hubs of the buckets and links substantially as shown and described.

4. In an elevator, the combination of a tumbler having flat polygonal faces and projecting blocks and alternating curved seats at the angles, detachable wearing-plates having flat faces fitting the flat faces of the blocks, and curved ends fitting in the seats, and an endless chain of alternating buckets and links having hubs fitting in the curved seats and flanges overlapping and inclosing the raised blocks substantially as and for the purpose described.

5. The combination in a dredge-elevator, of an upper tumbler having raised blocks on its several faces with curved alternating seats at the angles, detachable wearing-plates secured thereon, and alternating buckets and links having hubs and hinge-pins, the buckets having straight bottoms extending from the top of one hub to the top of the other hubs, and the links each having a straight plate extending from the top of one hub to the tops of the others substantially as and for the purpose described.

6. An elevator bucket-chain, consisting of alternating buckets and links each having two hubs at one end, and one long hub at the other provided with a longitudinal groove G at the inner surface of said long hub, and a cylindrical bushing fitting therein and having one side made thicker than the other and of a smaller internal circumference and having exteriorly on its thin side a rib or flange H fitting in said groove in the hub substantially as and for the purpose described.

7. The combination of an upper tumbler having raised blocks A placed centrally upon its faces and of less width than the same, detachable wearing-plates on said blocks and an endless chain of alternating buckets and links having straight plates extending from the top of one hub to the tops of the others with recesses on the under side receiving and fitting the raised blocks substantially as and for the purpose described.

8. An elevator composed of links and buckets each having perforated lugs F F formed on its hubs, and a recess K in the outer face of each of the hubs; in combination with a hinge-pin having a T-head fitting in said recess and provided with perforations at each end of said T-head registering with perforations in the lugs F to adapt said head to be bolted to either of said lugs substantially as and for the purpose described.

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