

(No Model.)

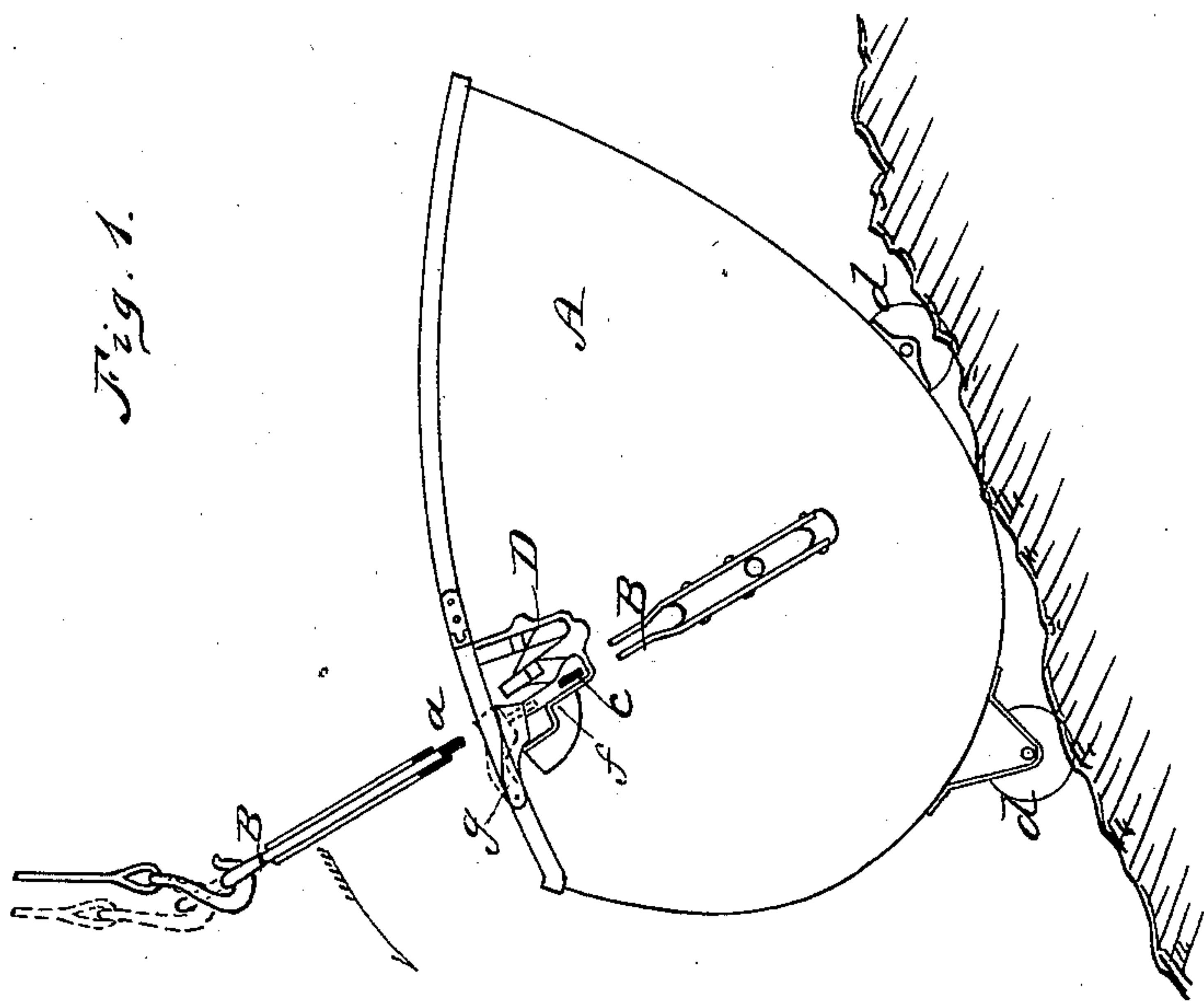
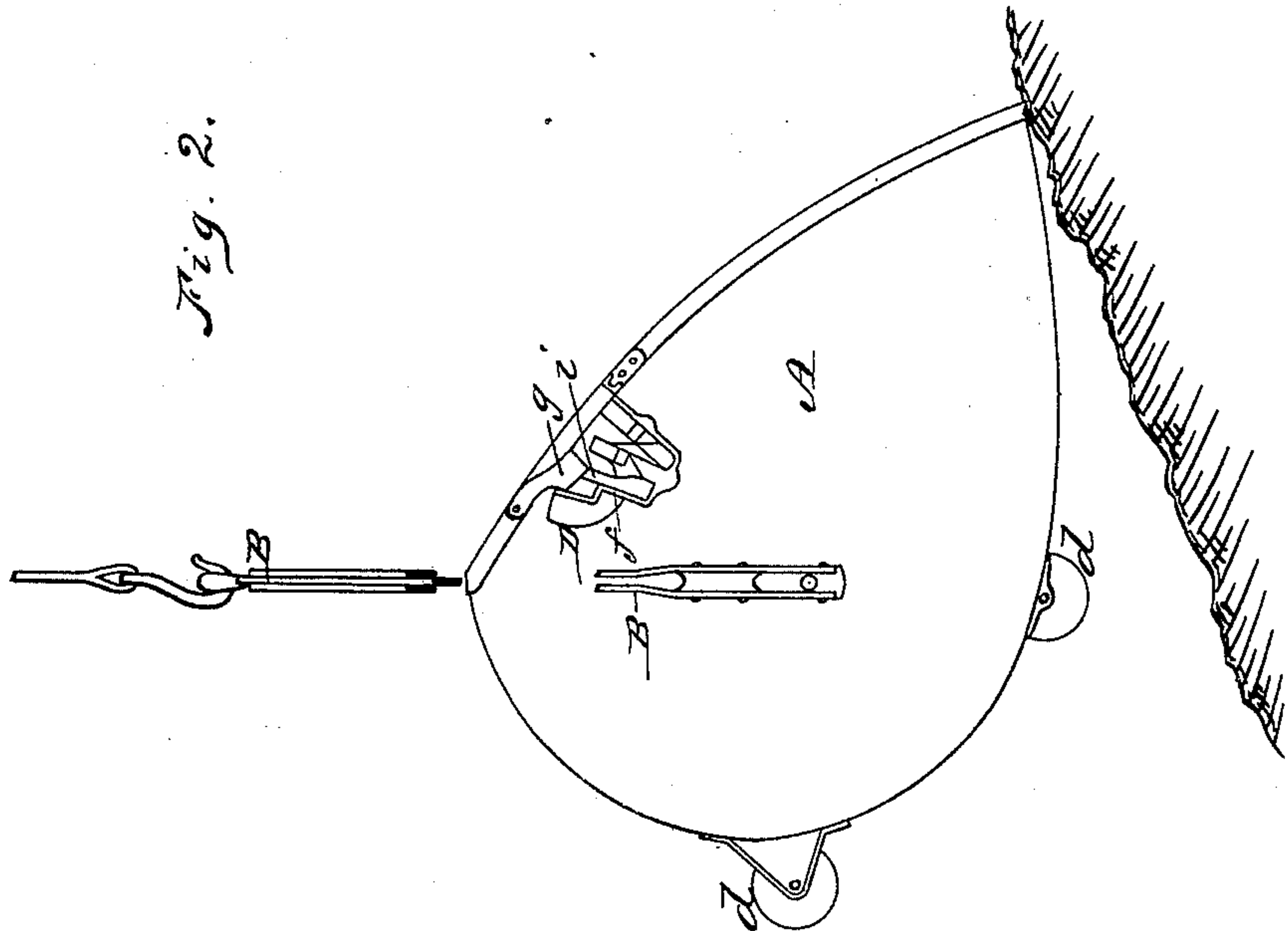
4 Sheets—Sheet 1.

A. E. BROWN.

AUTOMATIC DUMPING BUCKET FOR HOISTING AND CONVEYING
MACHINES.

No. 427,830.

Patented May 13, 1890.



Witnesses
M. C. Dunn
Edw. D. Leary

Inventor
Alex. C. Brown
By *J. N. M. Intire* Atty.

(No Model.)

4 Sheets—Sheet 2.

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Fig. 4.

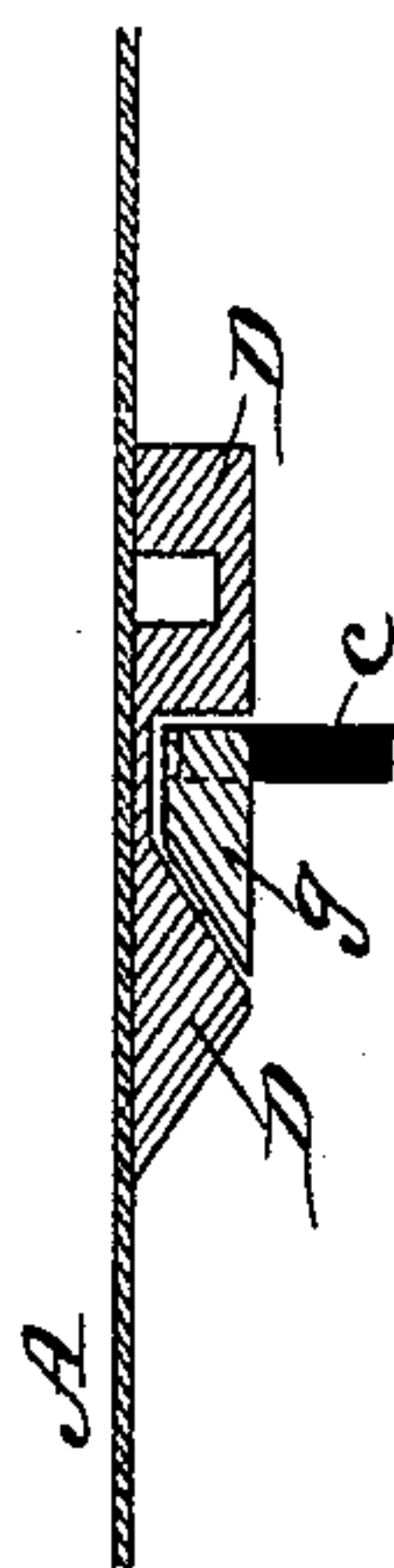
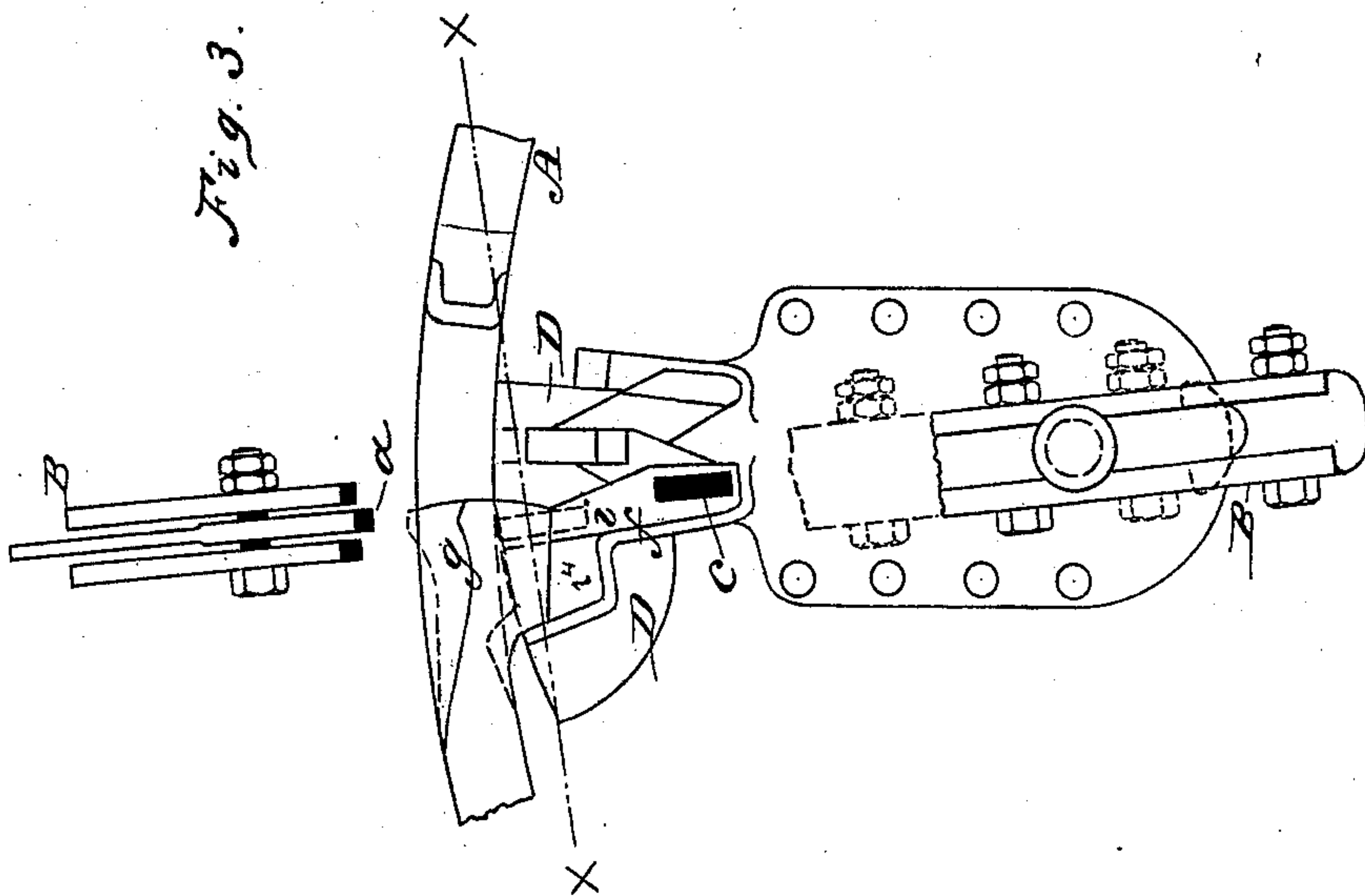


Fig. 3.



Witnesses
M. C. Rummel
Edw. D. Leary.

Inventor
Alex. E. Brown
J. N. McIntire
By Attys.

(No Model.)

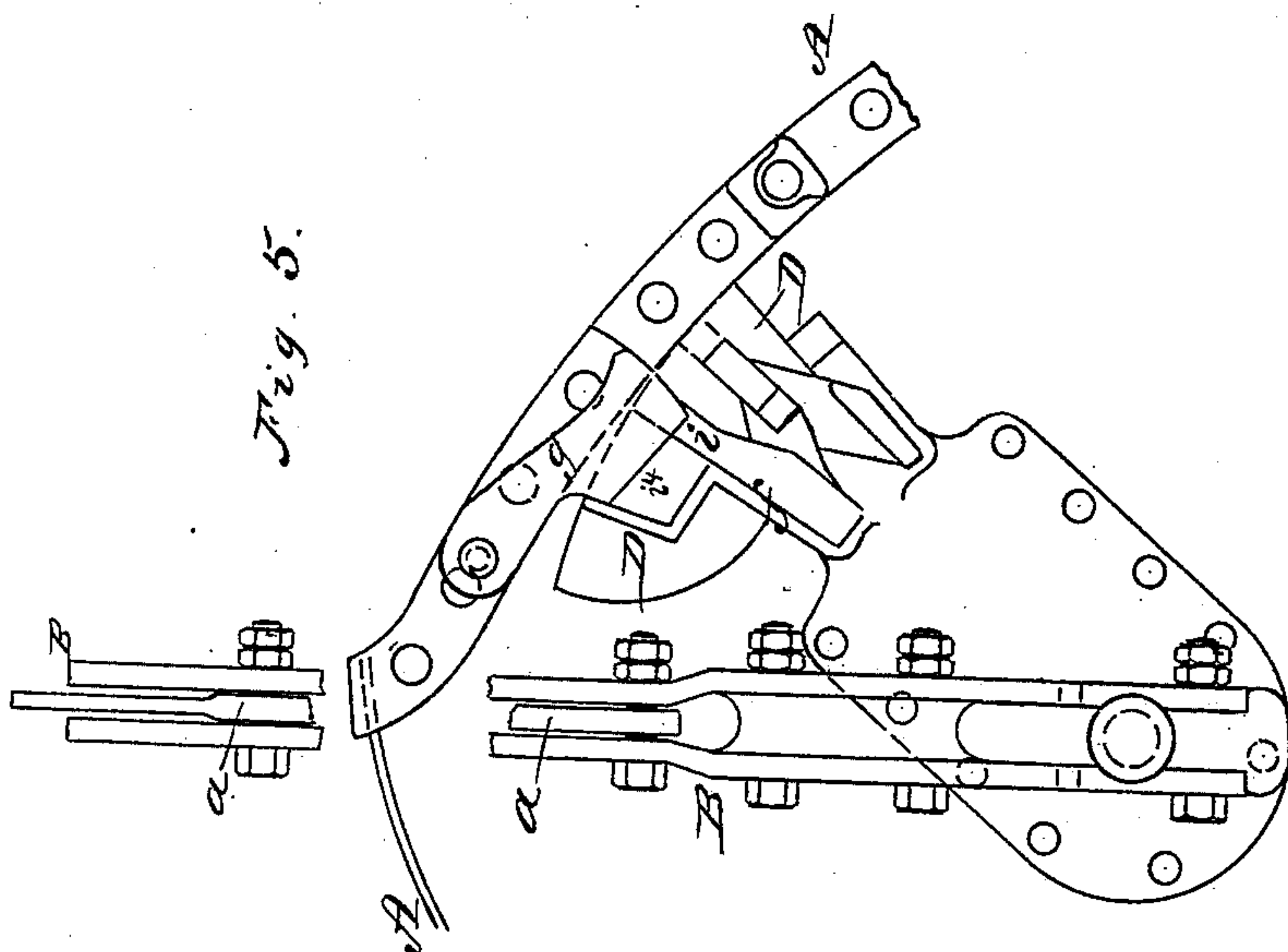
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M. C. Dunne
Edw. D. Leary

Inventor

Alex. E. Brown

By J. N. McIntire
Atty.

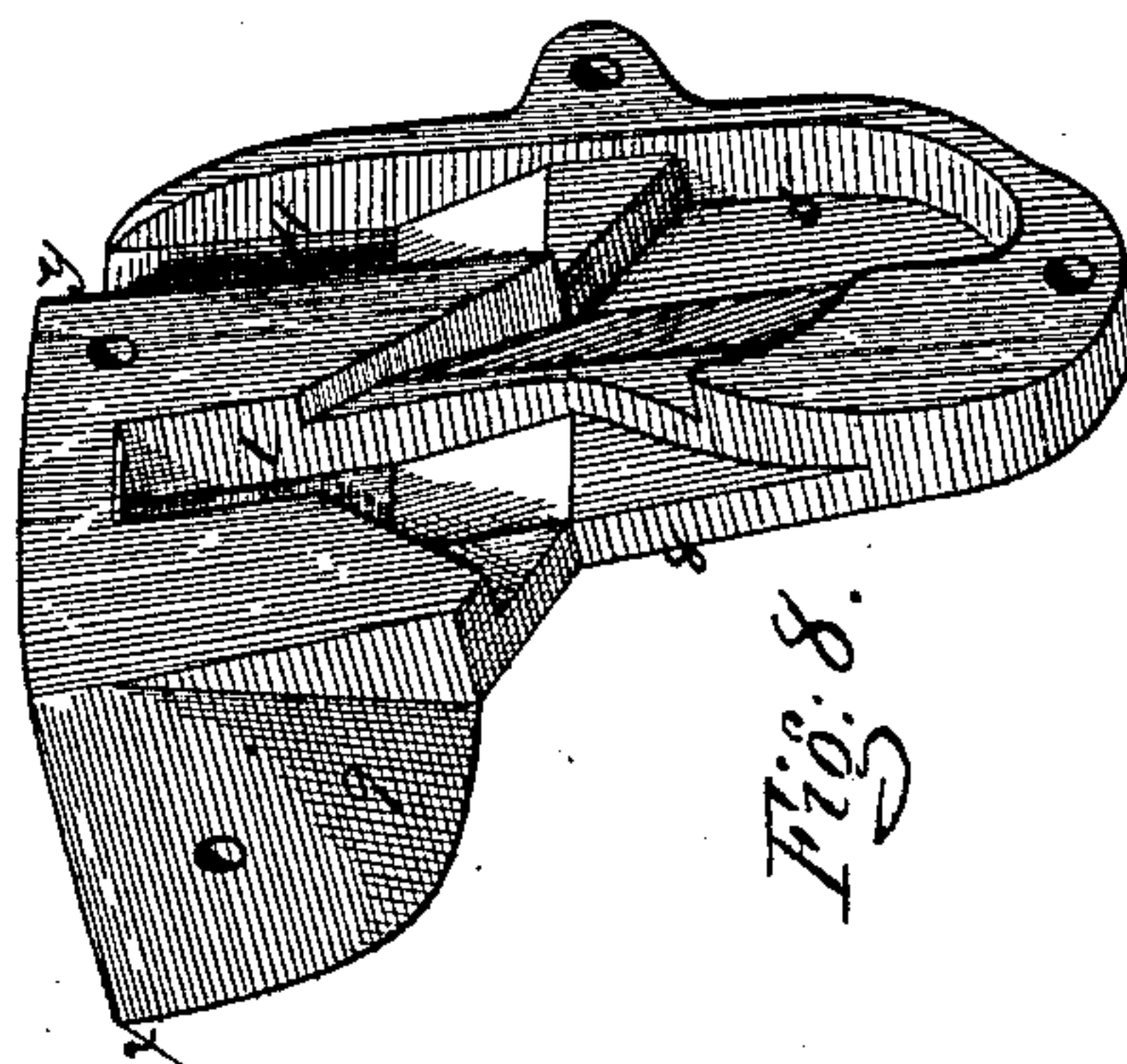
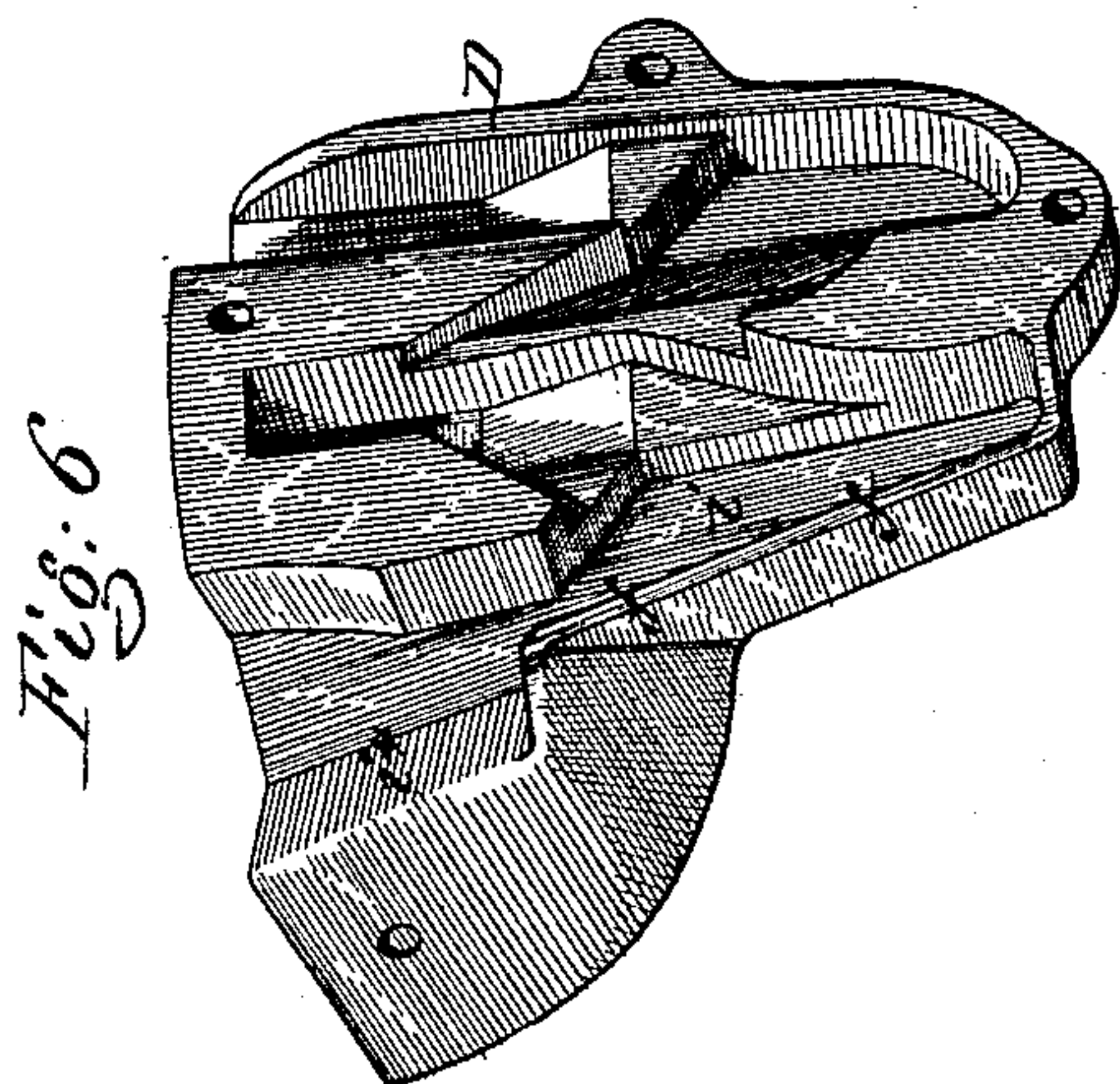
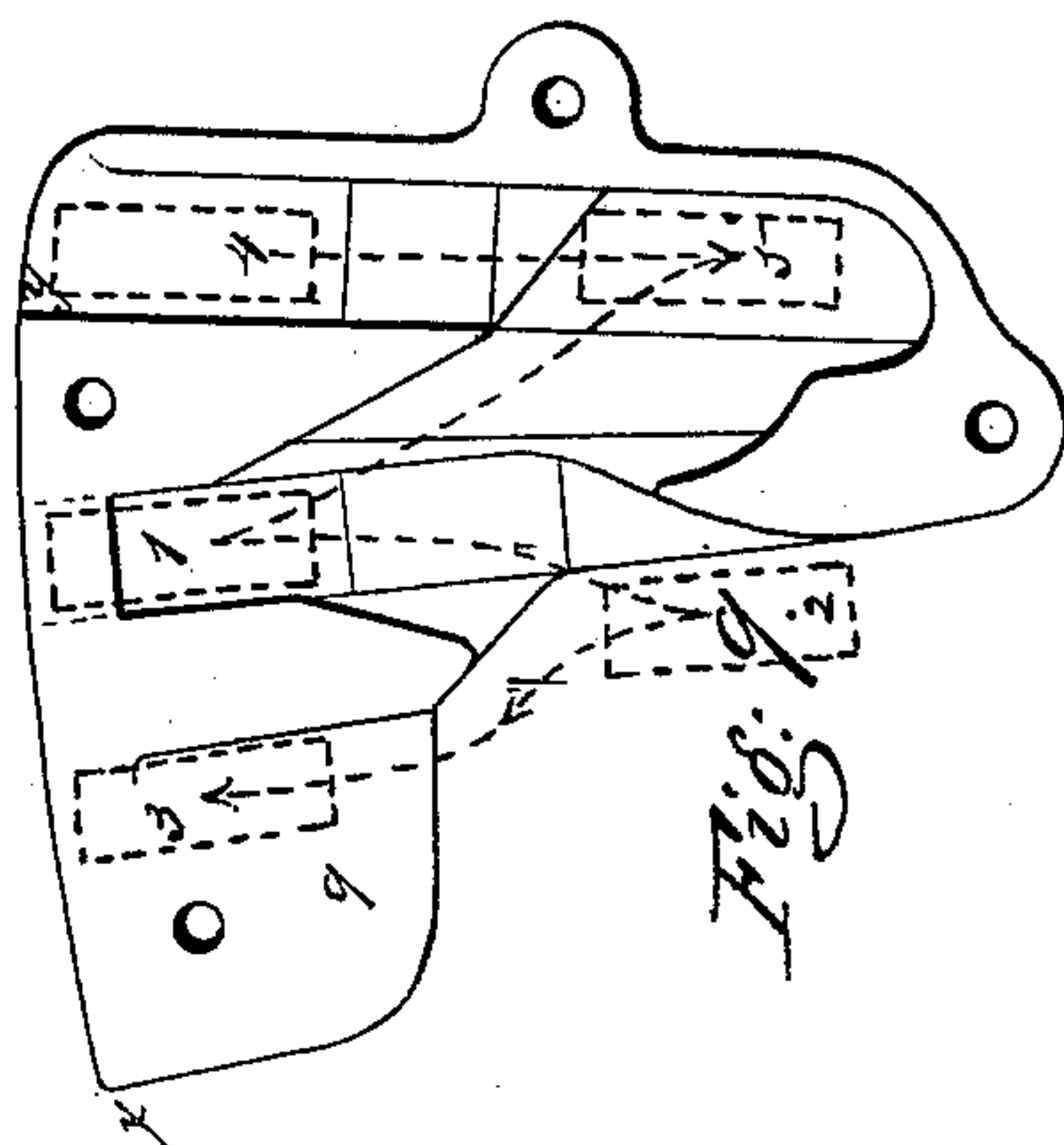
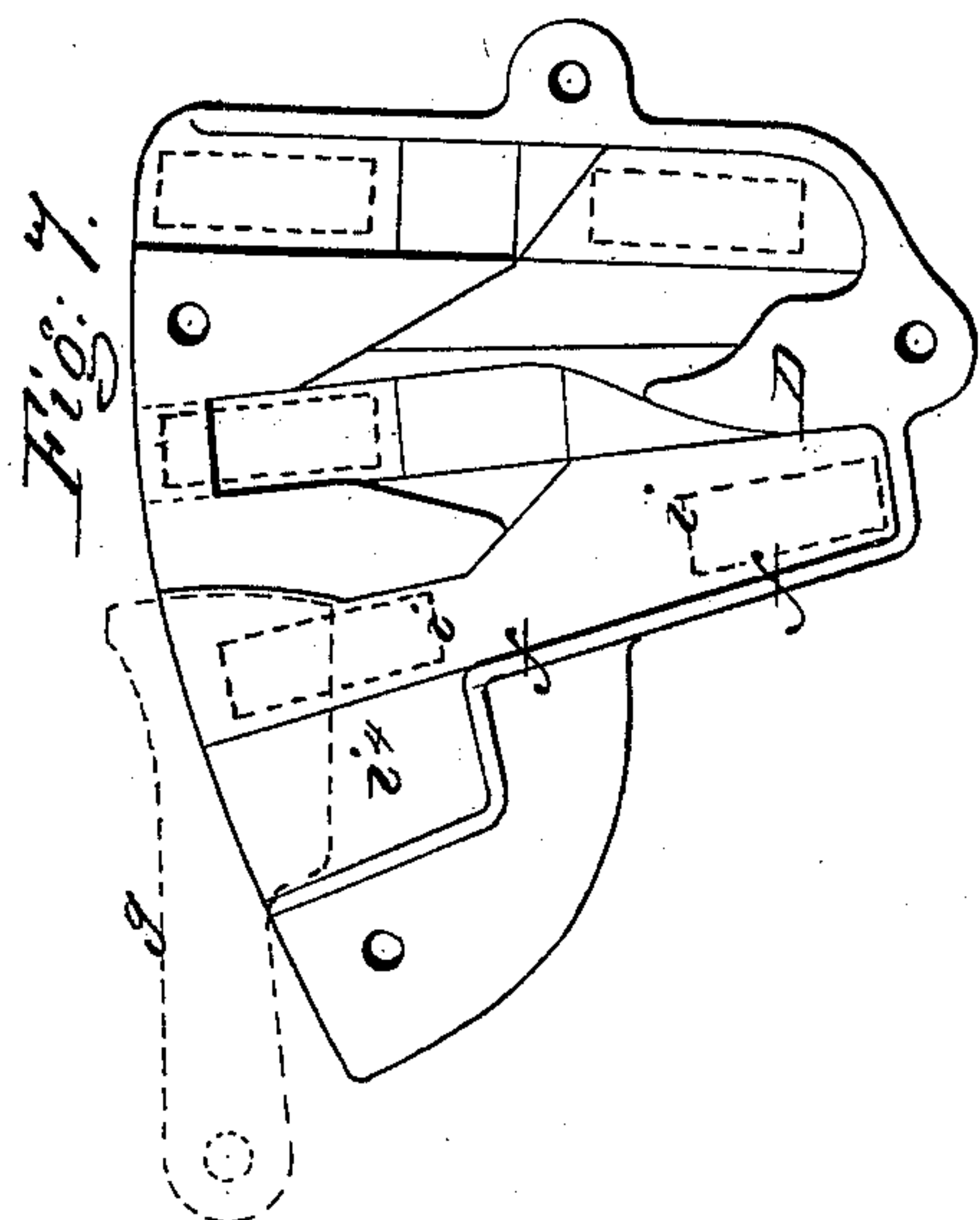
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4 Sheets—Sheet 4.

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AUTOMATIC DUMPING BUCKET FOR HOISTING AND CONVEYING
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No. 427,830.

Patented May 13, 1890.



Witnesses
Edw. D. Leary,
Florence M. Brown

Inventor
A. E. Brown
J. N. McIntire
By Atty.

UNITED STATES PATENT OFFICE.

ALEXANDER E. BROWN, OF CLEVELAND, OHIO.

AUTOMATIC DUMPING-BUCKET FOR HOISTING AND CONVEYING MACHINES.

SPECIFICATION forming part of Letters Patent No. 427,830, dated May 13, 1890.

Application filed February 20, 1890. Serial No. 341,156. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER E. BROWN, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and
5 useful Improvement in Automatic Dump-Buckets for Hoisting and Conveying 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, forming part of this
10 specification.

My present invention relates to a novel construction of automatic dump-bucket for hoisting and conveying machines, and is an
15 improvement upon the kind of automatic bail latching and unlocking mechanism made the subject of United States Patent No. 368,453, granted to me August 16, 1887.

I have found by practical experience in the
20 use of my said patented contrivance that, while under ordinary circumstances the mechanism shown and described in the patent for effectuating the automatic dumping of the bucket to discharge its contents and the re-
25 locking of the bail in place preliminarily to the lifting up and conveyance of another charge or load of material by the bucket works satisfactorily and perfectly, there is one condition or contingency (which is liable
30 to arise once in a while) under which my said patented contrivance does not always operate successfully. I have found that on these occasions, when the filled bucket may hap-
pen to be lowered onto the oblique side of a
35 pile or heap of material in such manner that the weight of the bucket will be supported by the slanting side of the pile at a sufficient degree of obliquity to the horizon, the mechanism shown in my patent and designed to
40 effect the dumping automatically of the bucket will not work successfully, owing to the fact that the intended overbalancing weight of the material at the mouth end or front of the bucket is neutralized by the ob-
45 lique position in which the bucket rests on the side of the pile, so that the engaging-lugs of the bail or handle of the bucket will, upon the lowering of the bail, escape from the cam-like devices, and then, upon the lifting of the
50 bail, the ascending lugs thereof will ride up laterally over the inclined surfaces or cheek-

pieces of the said cam-like devices in such manner that the bail or handle, when entirely lifted up, will have its lugs re-engaged with the cam-like devices, all in such manner that
55 the filled bucket will be carried up without having been afforded any chance to turn on its trunnions and discharge its contents. To overcome this defect or difficulty in my said patented contrivance, which, as before re-
60 marked, arises only under the special contingency or circumstance just above explained, I have devised the improvement which is made the subject of this application, and which consists, essentially, in the addition to
65 each one of the cam-like devices of my patented contrivance of an additional recess and wall-like stop, within which the engaging-lugs are confined at certain times, and a pivoted or movable bridge pawl or bar, all as will be
70 hereinafter more fully explained, and as will be more particularly pointed out and defined in the claim of this specification.

To enable those skilled in the art to which my improvement relates to understand and
75 practice the same, I will now proceed to more fully describe the nature of my present improvement on my patented machine, referring by letter to the accompanying drawings, which form part of this specification, and in
80 which I have shown my invention carried out in the precise form in which I have so far successfully and extensively practiced it.

In the drawings, Figure 1 is a side view of an automatic dump-bucket for a hoisting and
85 conveying machine, made otherwise in substantial accordance with my patented hoist-bucket, but having the improvement made the subject of this application applied thereto, and in this figure I have illustrated the
90 bucket as resting upon the oblique side of a pile of material (down onto which it is supposed to have just descended preparatory to the intended discharge of the contents of the bucket) in that condition under which my
95 said patented contrivance would not work right. Fig. 2 is a similar view of the improved bucket, but shown in the changed position which it would assume after having been partially lifted and tipped over by the ascent of
100 the bail or handle induced by the action of the "hoist-rope" of the hoisting-machine.

Fig. 3 is a duplication of a portion only of the parts seen at Fig. 1, but drawn on a considerably enlarged scale, and having a part of the bail or handle broken away for the purpose of more plainly showing my improved latching mechanism, and indicating by full and dotted lines the two positions which the bridge-lever may be made to assume. Fig. 4 is a detail cross-sectional view at the line $x-x$ of Fig. 3. Fig. 5 is a duplicate of a portion of the parts seen at Fig. 2, but drawn (like Figs. 3 and 4) on an enlarged scale. Fig. 6 is a perspective view of one of the improved cam-like devices with its pivoted bridge-bar detached from the bucket. Fig. 7 is a side view of the same detached parts. Figs. 8 and 9 are respectively a perspective view and a side elevation of the cam-like plate or device (detached from the bucket) that is shown and described in my said patent, these figures being introduced into the drawings of this case to enable me to better explain the nature of my present improvement or invention.

In Figs. 1 to 7, inclusive, the same part will be found always designated by the same letter of reference, while on Figs. 8 and 9 I have used the same reference numerals and letters that are seen on the corresponding parts, Figs. 7 and 8, of the drawings of my said patent.

Referring now to Figs. 1 to 7, inclusive, A represents the bucket proper of one of my patented automatic dump-buckets, and B the bail or handle, the pivoted levers a of which are provided, as shown, with engaging-lugs c , that are adapted to co-operate with the cam-like plates or devices D, that are secured to the sides of the bucket.

d are the wheels on which the bucket rests when lowered onto any supporting-surface, and the general construction and mode of operation of the bucket, it will be understood, are substantially the same as shown and described of the dump-bucket made the subject of my said patent of August 16, 1887. Each one of the cam-plates D, however, instead of being made as shown in said patent, is formed with the supplemental devices of an additional recess i and an outwardly-projecting rib or wall f , which operates to prevent the escape of the engaging-lug c of the bail-lever whenever the bail (after having been lowered) tips or oscillates in the direction indicated by the arrow at Fig. 1, and has the additional device of a bridge-bar g . This bar g is pivoted to the top rim of the bucket and acts when in its lowermost or normal position as a bridge, and at the same time is so arranged and so operates that when the bail or handle B shall have been lifted from the position into which it may have descended when the bucket was lowered onto a pile, as seen, for instance, at Fig. 1, the engaging or locking lug c of the bail-lever will strike against the under side of said bridge-bar g , and, lifting it upwardly, will be permitted to make its escape from the detaining-recess i of the cam-plate D,

the said lever g , after having resumed its normal position, forming a bridge across the upper end of the recess i , as above mentioned, over which the engaging-lug c of the bail-lever will travel whenever the handle or bail shall be moved in a direction opposite to that indicated by the arrow at Fig. 1 to allow the emptied bucket (see Fig. 2) to resume a righted and locked condition ready for its transference to the locality at which it is to be refilled.

In my patented dump-bucket (which works all right except under the conditions illustrated at Figs. 1 and 2) the operation, it will be understood, is such that if the filled bucket be lowered onto an oblique resting-surface—such as illustrated at Fig. 1, for instance—the lowering of the bail into the position seen in said figure will result in the escape of the lugs c from the recesses of the cam-plates, and then on the initial lifting of the bail into the position shown at Fig. 2 the lugs c will ride over the upper parts of the cam-plates and get into engagement with the recesses nearest to the front edge or mouth of the bucket, so that as the lifting of the bail is continued the bucket, thus locked to the bail, will be lifted up without having been permitted to tip and dump its contents. This will be most easily understood by reference to Figs. 8 and 9, from which it will be seen that if a bucket provided with cam-like devices such as there shown be lowered in a filled condition into the position indicated at Fig. 1 a slight further descent of the bail will permit the locking-lugs c to descend from the position numbered 1 at Fig. 8 to that marked 2, and that thereafter on lifting the bail the lugs c will ascend in lateral contact with the side portion 8 of the cam-plate until they shall have reached the position 3, whereupon, the lower ends of the bail having by this time come to bearings on the trunnions of the bucket, said bail will vibrate in a direction opposite to that indicated by the arrow at Fig. 1 until the lugs c shall have passed over into the positions indicated by 4 at Fig. 9, because during the continued lift on the bail, (by the hoist-rope,) after its lower end shall have come to bearings on the trunnions of the bucket, the latter has its center of gravity at such a point relatively to the trunnions and the ascending and vibrating bail that there is no tendency for the filled bucket to tip forward on its pivoted connections with the ends of the bail. With the supplemental devices and changes, however, that constitute the pith of my present improvement it is physically impossible for the bail to be lifted without effecting the lifting up of the filled bucket into such a position that the superabundance of the weight of the contents at the forward end of the bucket will be brought into operation to effect the turning of the bucket on its trunnions or on the pivotal connection with its bail into the position illustrated at Fig. 2, because during the initial pull of the hoist-

rope on the bail the lugs *c*, having been re-
 tained within the (supplemental) recesses *i* by
 the stop-like walls *f* thereof, will ride up-
 wardly in contact with and will press against
 5 the opposite walls of said recesses until they
 shall arrive at their uppermost positions, (rel-
 atively to the bucket,) as indicated in dotted
 lines at Figs. 1 and 3, thus enforcing the right-
 ing of the bucket from the position seen at
 10 Fig. 1 to one in which the preponderance of
 weight in the front portion of the filled bucket
 will cause it to tip forward, the lugs *c* then
 riding backward over the inclined surfaces
 15 *i*⁴ (see Fig. 3) of the cam-plates while the
 bucket dumps. Of course after the complete
 discharge of the contents of the bucket by
 the lifting of the latter clean away from the
 supporting-surface, so as to permit the mouth
 20 end of the bucket to travel still farther in
 the dumping direction, the bucket will right
 itself by reason of the preponderance of
 weight at the back side of the emptied bucket,
 all in a manner well known to those skilled
 25 in the art and agreeably to the mode of oper-
 ation of my patented self-dumping bucket;
 and it will be understood, of course, that as
 the bucket thus resumes its normal or righted
 position the locking or engaging lugs *c* are
 30 not obstructed at all in their movements rela-
 tively to the oscillating and righting bucket
 by the presence of the lug-retaining recesses
i, since at this time, the bridge-bars *g* having
 descended by gravity to their normal posi-
 tions, said bars form perfect bridges, so to
 35 speak, (see Fig. 4,) across the upper end of
 the recesses *i*, over which bridges the lugs *c*
 freely travel to permit the bucket to resume

its normal position in the emptied condition.
 When the emptied bucket shall have been
 returned to the locality at which it is to be 40
 filled, the lowering of the bucket onto the plane
 of support and the further lowering of its
 bail cause the lugs *c* of the latter to descend
 from the positions indicated at 4, Fig. 9, to
 that marked 5, and upon the lifting up of the 45
 bail to elevate the filled bucket these lugs
 will pass from the positions marked 5 to those
 indicated by 1 at Fig. 9, in which latter posi-
 tions they are positively locked to the bucket,
 all as fully shown and described in my said 50
 patent.

Having now so fully explained the nature
 of my invention or improvement upon my
 patented automatic dump-bucket that those
 skilled in the art can make and use the pat- 55
 ented article with the additional improve-
 ment made the subject of this application,
 what I claim herein as new, and desire to se-
 cure by Letters Patent, is—

The combination, with the bucket, its bail, 60
 and the locking-levers provided with engag-
 ing-lugs *c*, of the grooved or recessed cam-
 plates *D*, formed with the detaining-recesses
i and provided with pivoted bridge-bars *g*,
 the whole constructed and operating together 65
 in substantially the manner and for the pur-
 poses hereinbefore set forth.

In witness whereof I have hereunto set my
 hand this 18th day of January, 1890.

ALEX. E. BROWN.

In presence of—

CHAS. W. KELLY,
 C. B. KRAUSE.