

No. 874,207.

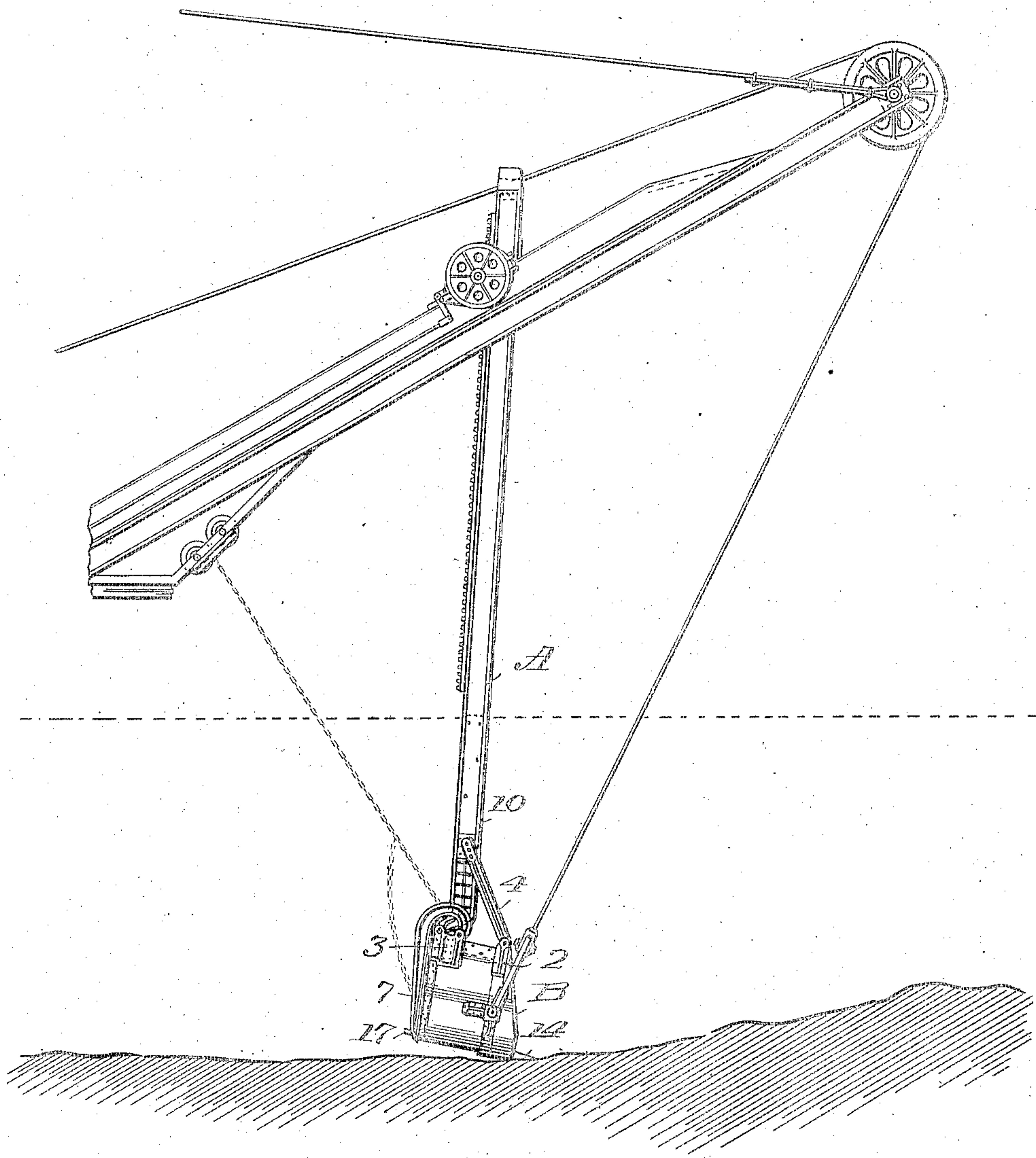
PATENTED DEC. 17, 1907.

J. P. KARR & J. D. RAUCH.
DIPPER AND DIPPER HANDLE FOR EXCAVATORS.

APPLICATION FILED FEB. 12, 1907.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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Fig. 2.

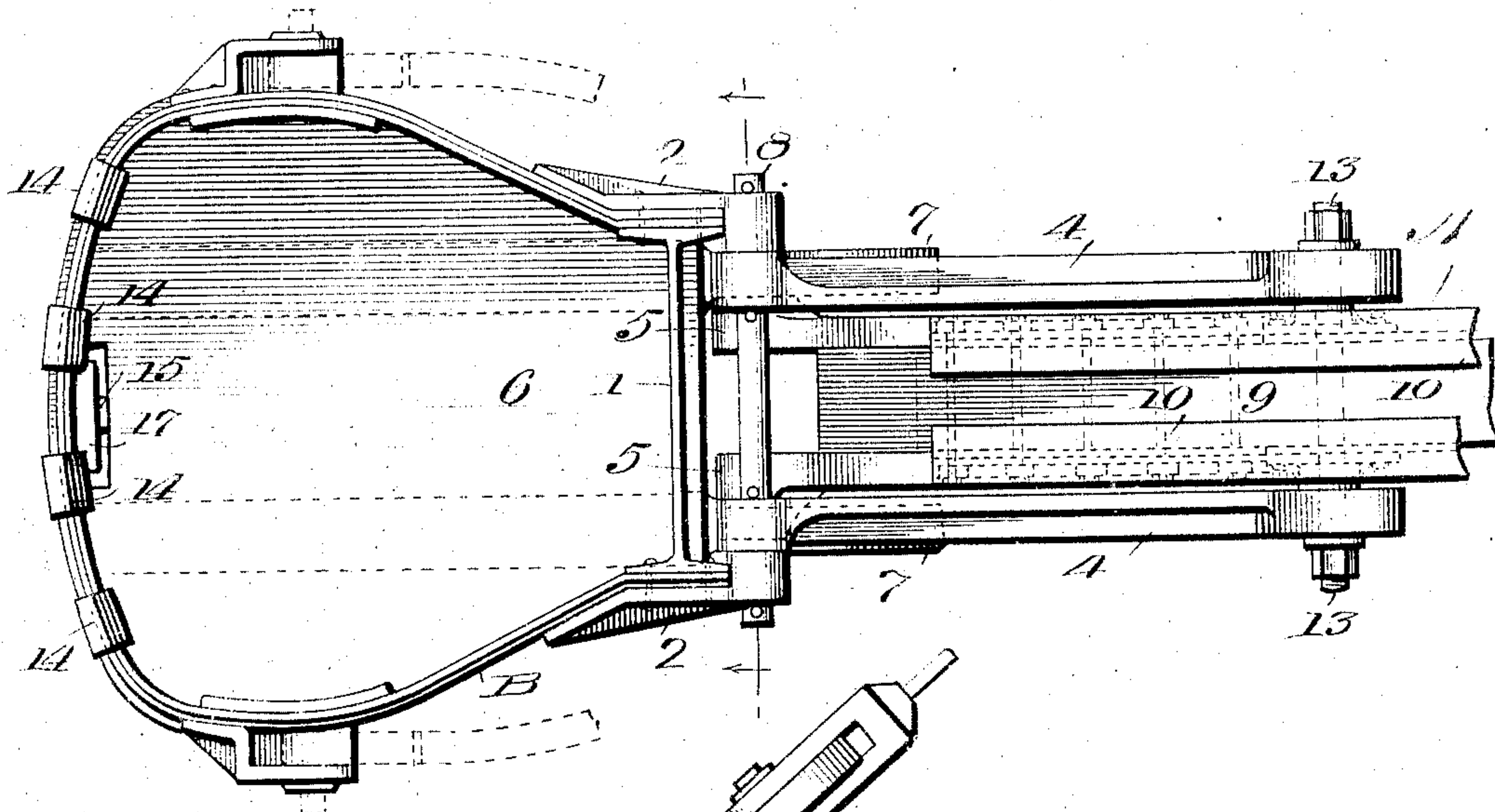
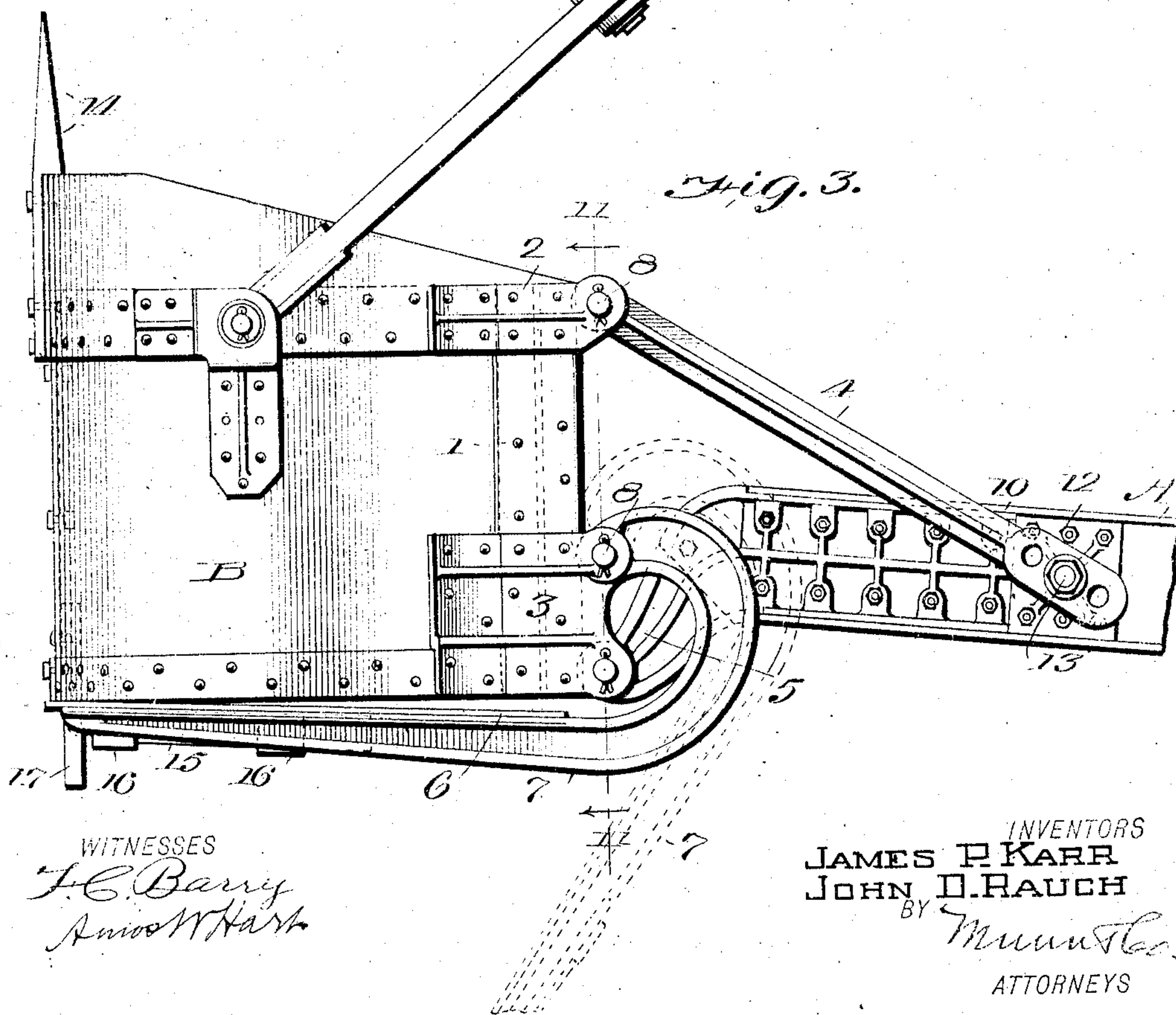


Fig. 3.



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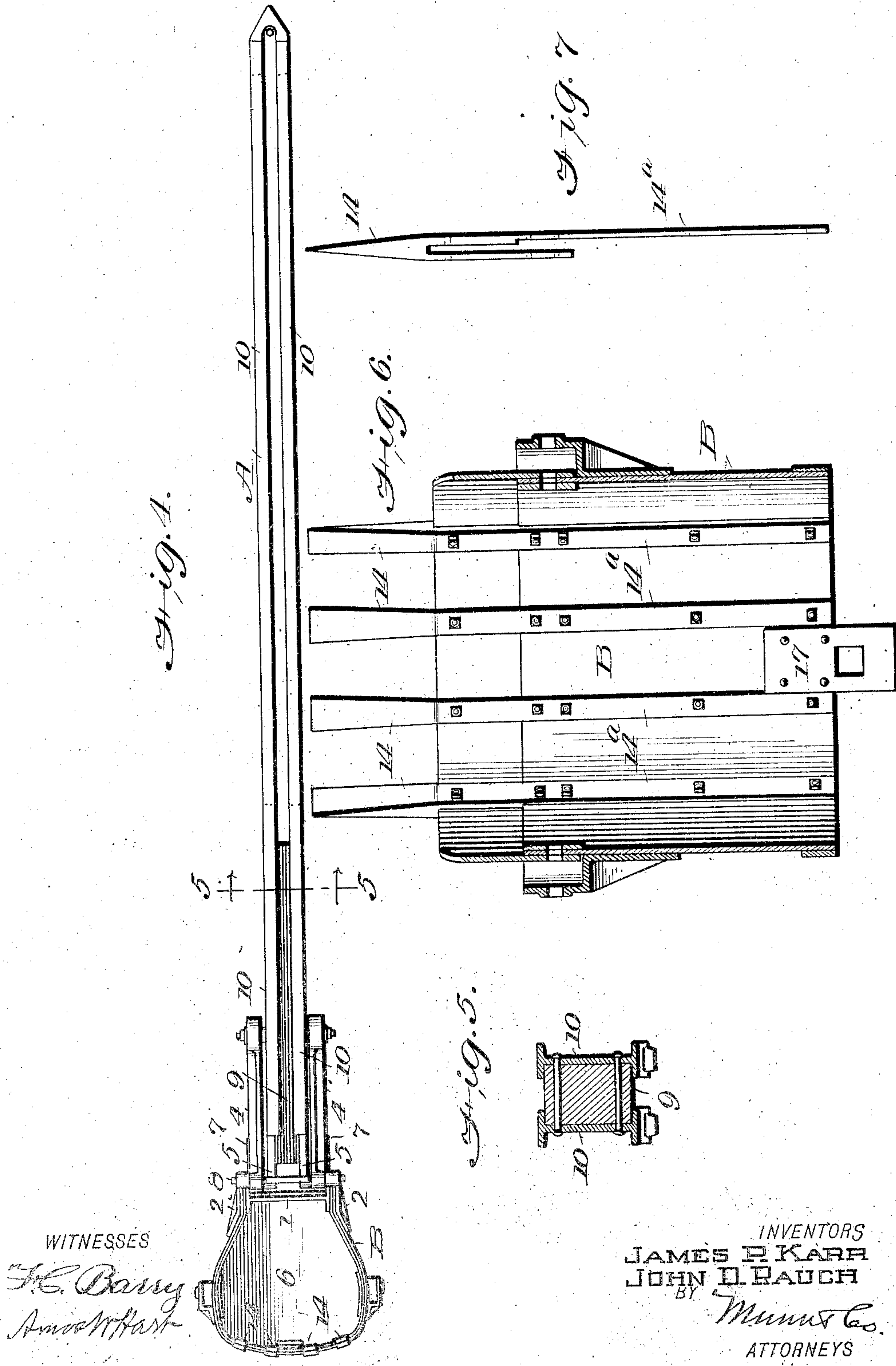
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 8.

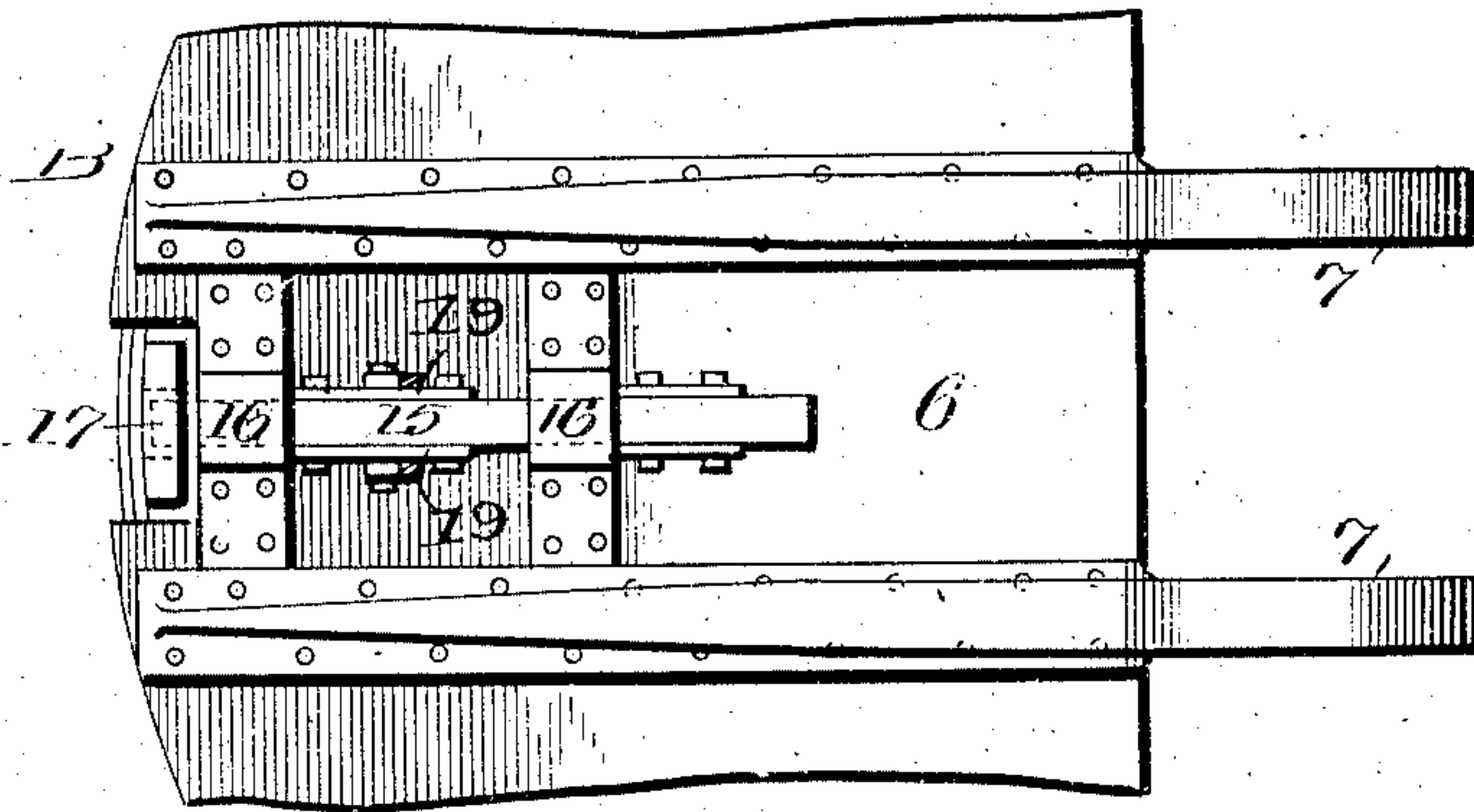


Fig. 9.

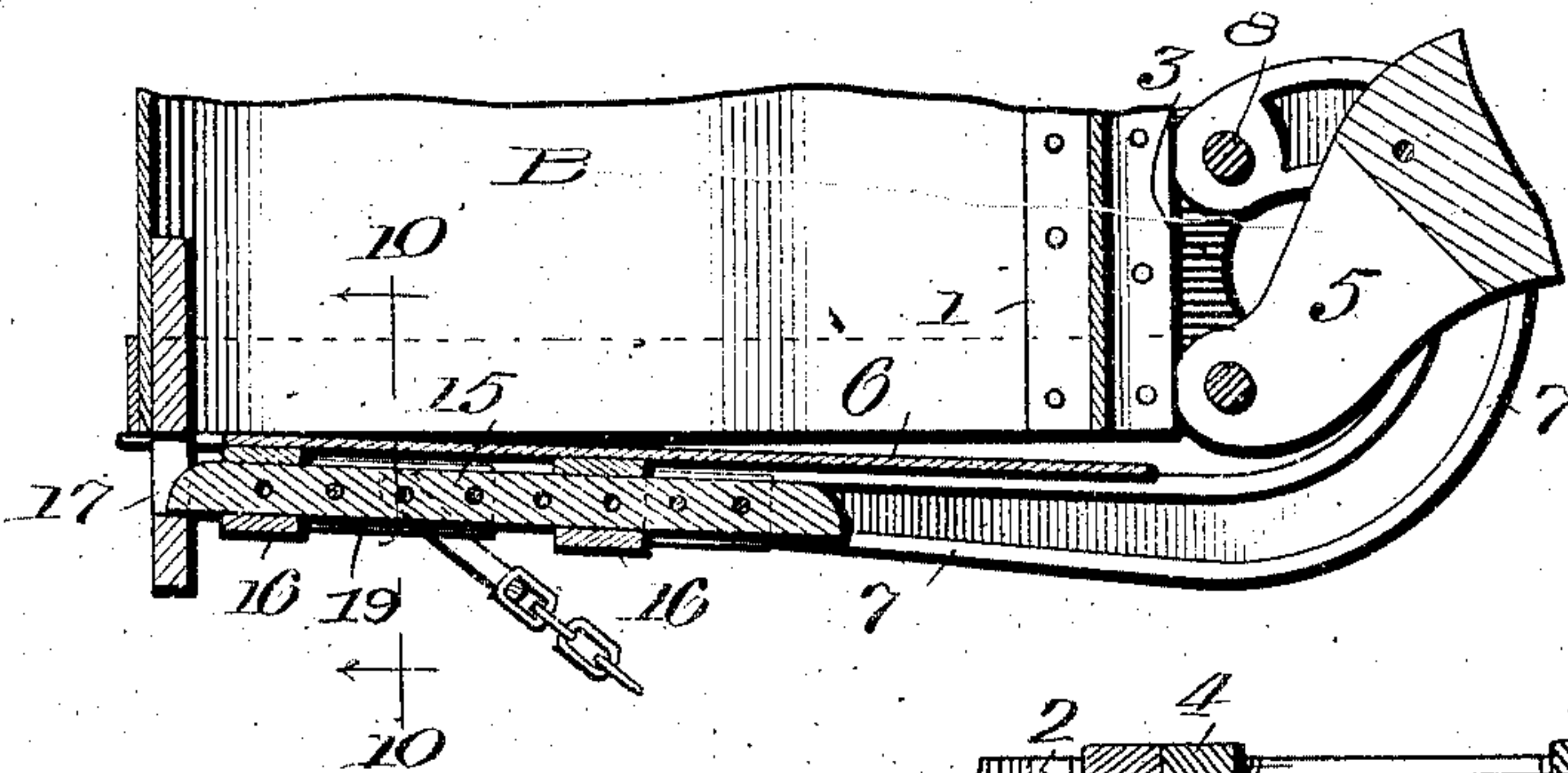


Fig. 11.

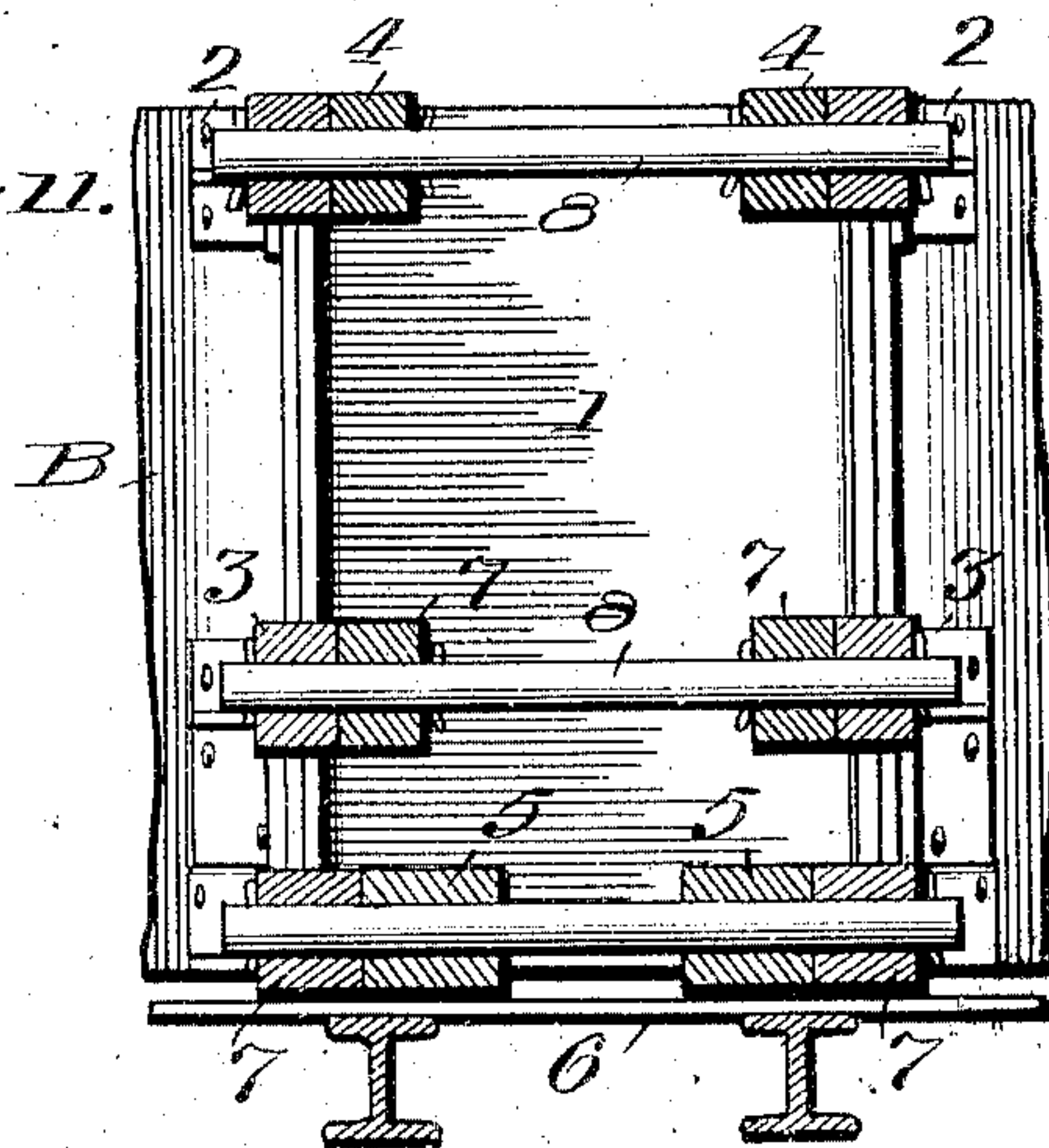
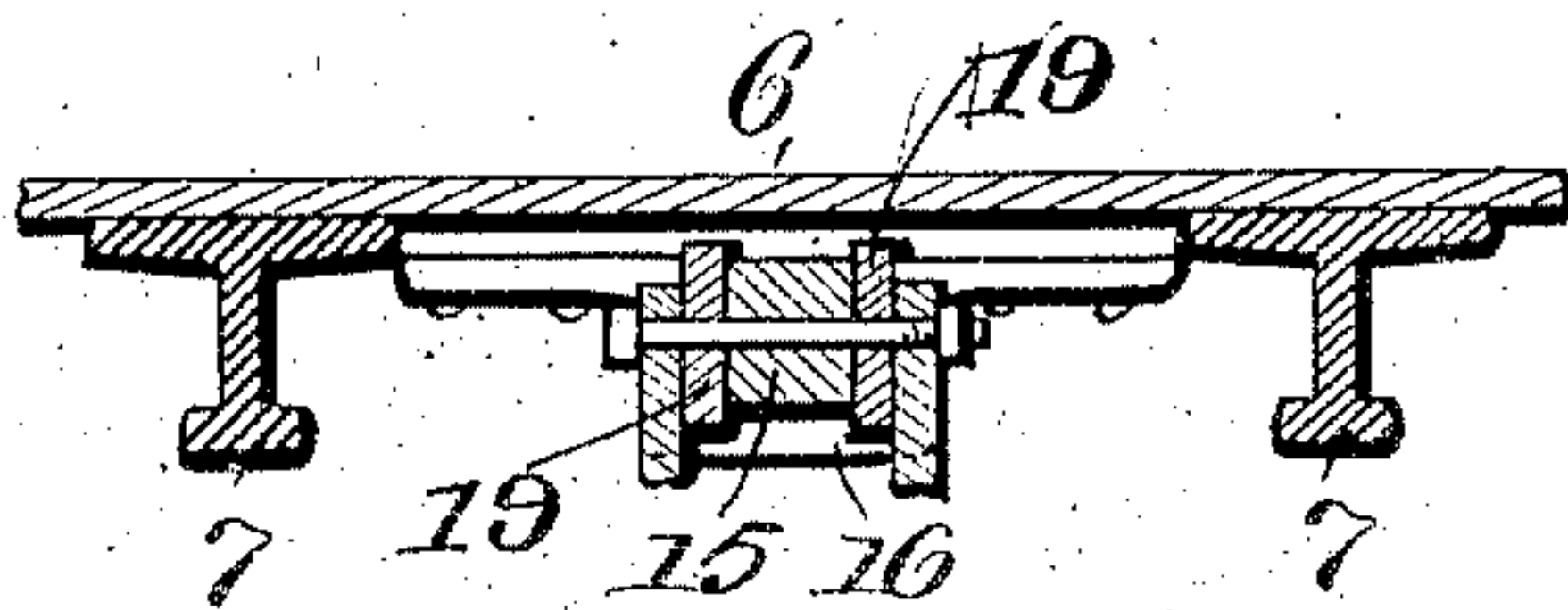


Fig. 10.



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UNITED STATES PATENT OFFICE.

JAMES P. KARR AND JOHN D. RAUCH, OF LOGANSPORT, INDIANA.

DIPPER AND DIPPER-HANDLE FOR EXCAVATORS

No. 874,207.

Specification of Letters Patent.

Patented Dec. 17, 1907.

Application filed February 12, 1907. Serial No. 857,018.

To all whom it may concern:

Be it known that we, JAMES P. KARR and JOHN D. RAUCH, citizens of the United States, and residents of Logansport, in the county of Cass and State of Indiana, have invented an Improved Dipper and Dipper-Handle for Excavators, of which the following is a specification.

The object of our invention is to provide land and marine excavators of a well-known type with a dipper and handle therefor of improved construction whereby certain advantages are attained in respect to rigidity, lightness, and durability, also efficiency in work.

The details of construction, arrangement, and combination of parts are as hereinafter described, and illustrated in the accompanying drawings, in which

Figure 1 is a side view of our improved dipper and dipper handle together with the boom and other hoisting devices required for operating the same. Fig. 2 is a face or plan view of the dipper and a portion of the handle. Fig. 3 is a side view of the same. Fig. 4 is a face view of the dipper handle shown at full length. Fig. 5 is an enlarged transverse section on the line 5—5 of Fig. 4. Fig. 6 is a longitudinal section of the dipper or shovel. Fig. 7 is a side view of one of the teeth of the dipper detached. Fig. 8 is a view of the underside of the dipper. Fig. 9 is a longitudinal section of the lower portion of the dipper. Fig. 10 is a transverse section on the lines 10—10 of Fig. 9. Fig. 11 is a section on the line 11—11 of Fig. 3.

A indicates the handle of the dipper, and B, the dipper proper, both of which are constructed of iron or steel, and in such manner as to combine maximum strength, rigidity, and lightness. The body of the dipper, B, is constructed of boiler plate, or other heavy metal plate of suitable thickness to possess the required rigidity and durability.

An important feature of our invention is the construction of the back 1 of the dipper—see Figs. 2—9—11. The back consists of a metal plate which is of I-form in cross section, it being arranged so that the heads or double flanges lie in contact with the sides of the body of the dipper and are riveted to the same, as shown. By this means the dipper is strengthened and made very rigid at the point where it is subject to the greatest strain, and yet without increasing its weight as compared with the ordinary dipper.

To the corners of the dipper, and thus to the ends of the double flanged back 1, we attach corner pieces 2 and 3—see especially Fig. 3. To one of these, namely 2, we pivot the braces 4, which extend back and are attached to the handle A, and to the other we pivot the nose 5, of the handle, the pivot pins being placed immediately adjacent to the bottom and rear corners of the dipper. By this means the points of attachment of the brace and handle are placed as far apart as practicable, so that in lifting a load, the dipper is subjected to the least practicable strain. The nose 5 of the handle being curved downward, the handle proper is brought nearly opposite the center of the back of the dipper and is thus out of the way, or so located with reference to the swinging bottom of the dipper that it does not interfere with the operation of the latter. The swinging bottom 6 of the dipper is secured to curved arms 7 which are I-shaped—as shown in Fig. 10—and whose rear and upper ends are pivoted at 8 to the corner plates 3, the nose 5 of the handle A, being between them, as shown.

As it will be understood by reference to Fig. 2, the nose 5 is, in fact, in two parts, which are bolted to the opposite I-beams composing the handle A. The filling piece 9—see Fig. 2—lies between and spaces apart the two portions 10—10 comprising the handle and is held in place between the inner flanges of the same, as shown in Fig. 5, the same bolts which secure the shanks or upper portions of the nose-piece 5 passing also through the filling-piece 9, so that all the parts are rigidly connected. Another block 12—see Fig. 3—is arranged between the outer flanges of the handle bars and to these the rear ends of the bars 4 are attached by means of a bolt 13, which may be adjusted in different holes formed in the bars whereby the angle of the handle to the dipper B may be changed at will, according to the kind of work for which the dipper may be employed, that is to say, according to the condition of the earth in which the dipper is being used for excavating. The pivotal pins 13, being located on the sides of the handle A, and the blocks 12 being secured between the flanges thereof, it is apparent that the strongest practical connection is formed, while the weight is reduced to a minimum.

The body of the dipper handle or beam A is composed of two flanged metal plates or

parts which are I-shaped in cross section, as shown in Fig. 5, and as also indicated in other figures. As in the case of the back 1 of the dipper, this form combines maximum strength, rigidity, lightness, and durability, while providing also for the strongest practicable connection between the handle, the nose 5, and the dipper braces 4.

The form of the teeth 14 of the dipper—as shown in Figs. 6—7—is wedge-shape in one direction, that is to say, beveled on the upper and under side, while they are made widest at their points and taper thence backward to the point of attachment to the body of the dipper. The shanks of the teeth are slotted longitudinally to receive the front edge of the body of the dipper, and the upper portion 14^a of the shank is extended entirely across the inner side of the dipper—see especially Fig. 6. The form of the teeth enables them to easily enter or dig the earth and support it when the dipper is being lifted, while the extension of the shanks across the body greatly strengthens the latter and prevents injury to, or rapid wear of, the latter in case large stones are encountered in digging.

Underneath the bottom 6 of the dipper B, and parallel to the arms 7 is arranged a slidable latch 15—see Figs. 8—9—10—the same consisting of a straight bar arranged in keepers 16, and adapted to enter a pocket in a piece 17, which is pendent from the side of the dipper. The latch bar 15 is constructed the same at each end and provided with a series of holes for attachment of a chain or other device for sliding the bar. The latter is thus adapted to be reversed as required. The same bolt that attaches the chain to the latch also passes through stop plates 19 which are additionally secured by two other bolts. These plates limit the movement of the latch 15 by contact with the keepers 16, but are necessarily of such length relative to the space between said keepers that they permit the latch to slide far enough to engage with, and disengage from the socket 17.

The rigid body or shell of the dipper is constructed practically of two parts, namely, a single sheet of plate metal bent or curved to the proper form, and the I-back which is riveted to and connects the edges of said shell, the brackets or plates 2—3 being bolted to both the shell and back. The handle, or more specifically, the nose piece directly attached thereto, is pivoted to these brackets or plates instead of being attached to the back proper, as is the usual construction, so that the back is not weakened by boring for insertion of bolts or rivets, and may be made comparatively light. Further, the curved

arms carrying the swinging bottom or door of the dipper are also attached to the said brackets or plates 3, instead of the back proper.

What we claim is:

1. The improved dipper handle comprising, as to its body, two light pieces of flanged iron spaced apart but rigidly secured together, and a nose-piece comprising parts which are bent downwardly at their outer ends, the shanks or body portions being arranged between the exterior flanges of the said pieces and securely bolted in place, substantially as described.

2. The combination, with a dipper, a handle formed of I pieces, having a nose bent downward, and pivot blocks 12 secured between the flanges of said pieces, of braces 4 pivoted to the upper corners of the dipper back, and their opposite ends pivoted to said blocks and having a series of holes providing for adjustment of the pivot bolt, as shown and described.

3. The improved dipper body having a back which is an I-plate, the flanges of the same being riveted to the edges of the body, as shown and described.

4. The combination with the body of the dipper having brackets 2—2 and 3—3 attached at its corners, of the bottom arms 7, handle pieces 5, and braces 4, pivoted as described.

5. The combination with the body of the dipper, of a series of teeth projecting forward from its edge, the same being beveled on the upper and underside and made broadest at their outer ends and tapered rearward therefrom, the shanks of the teeth being slotted to embrace the edge of the dipper body, and the upper portion of the shank being extended across the side of the dipper, thus forming ribs on the interior of the dipper, as shown and described.

6. The dipper provided with projecting beveled teeth whose outer ends are broader than the remaining portion which is tapered backward, as shown and described.

7. The combination with the dipper body and the bottom hinged thereto and provided with keepers, of a latch held slidably in said keepers and consisting of a reversible latch bar which is similarly constructed at both ends and provided with a series of transverse holes, and a keeper on the body of the dipper which the latch is adapted to engage, as shown and described.

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