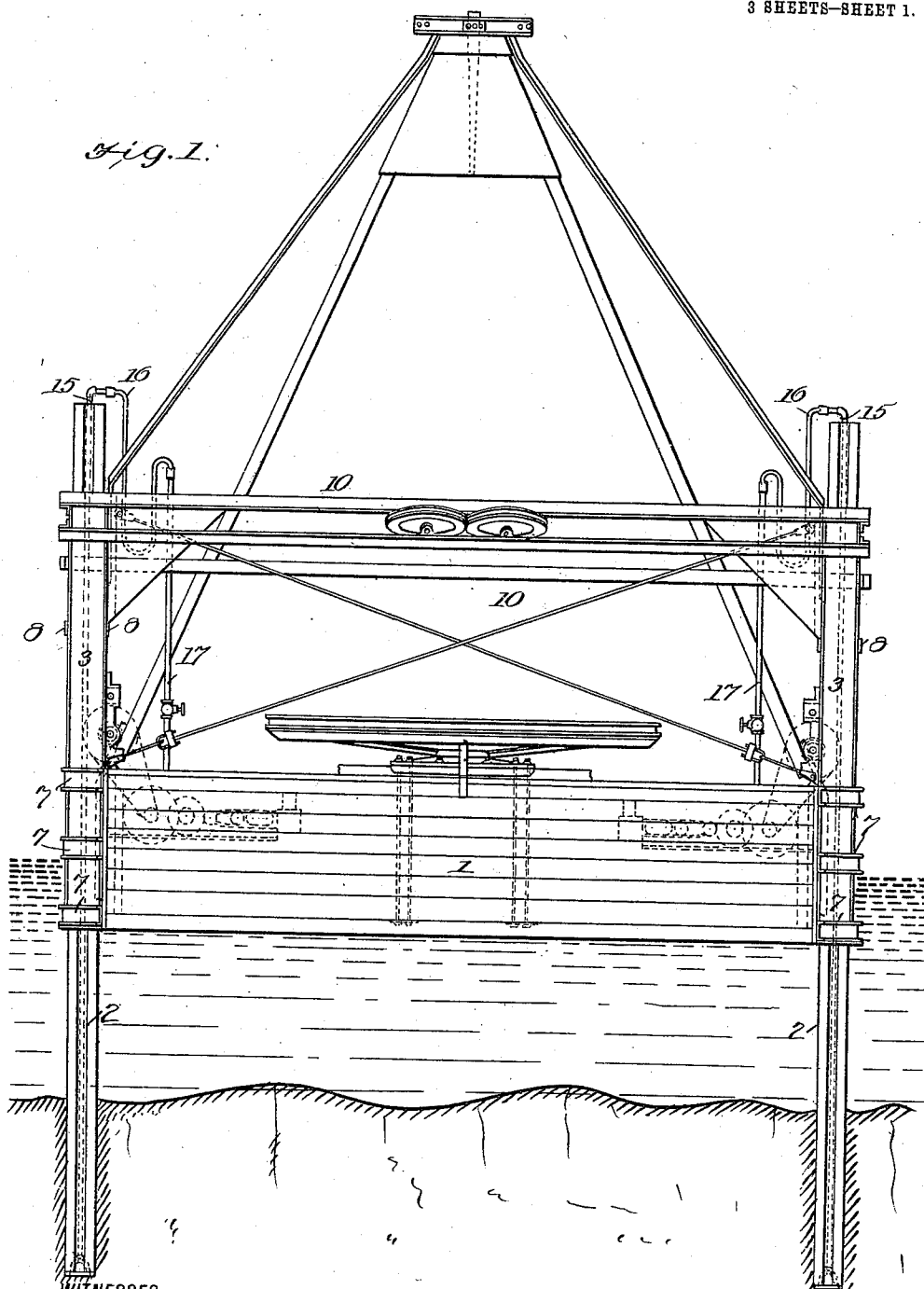


J. P. KARR & J. D. RAUCH.
ANCHORING ATTACHMENT FOR FLOATING BARGES.
APPLICATION FILED JULY 2, 1910.

987,886.

Patented Mar. 28, 1911.

3 SHEETS—SHEET 1.



WITNESSES:

F. C. Barry
Amos W. East

INVENTORS

JAMES P. KARR
JOHN D. RAUCH

BY *Munn & Co.*

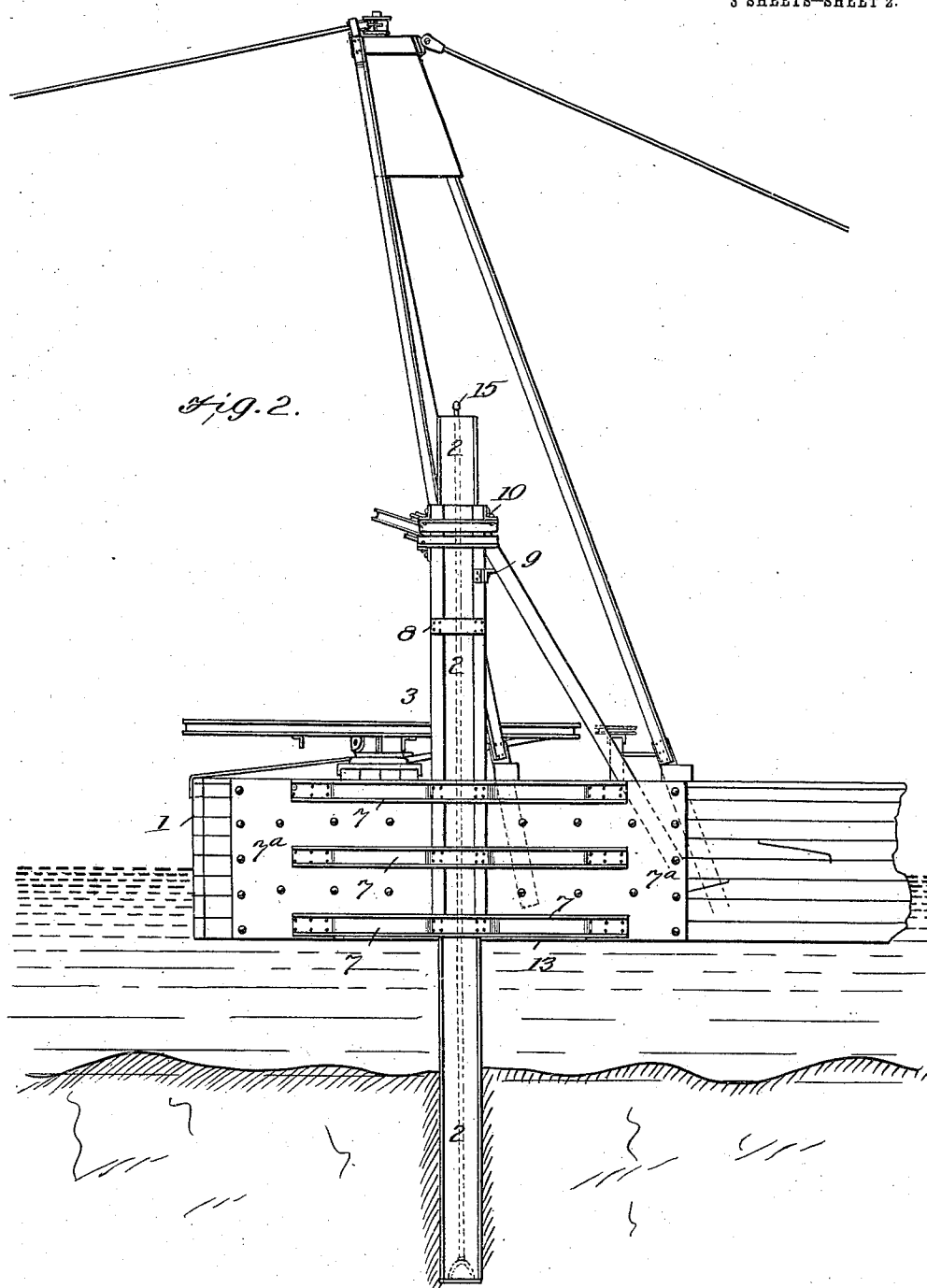
ATTORNEYS

J. P. KARR & J. D. RAUCH,
ANCHORING ATTACHMENT FOR FLOATING BARGES.
APPLICATION FILED JULY 2, 1910.

987,886.

Patented Mar. 28, 1911.

3 SHEETS—SHEET 2.



WITNESSES:

F. C. Barry
Amos W. Hart

INVENTORS.

JAMES P. KARR
JOHN D. RAUCH
BY *Munn & Co.*

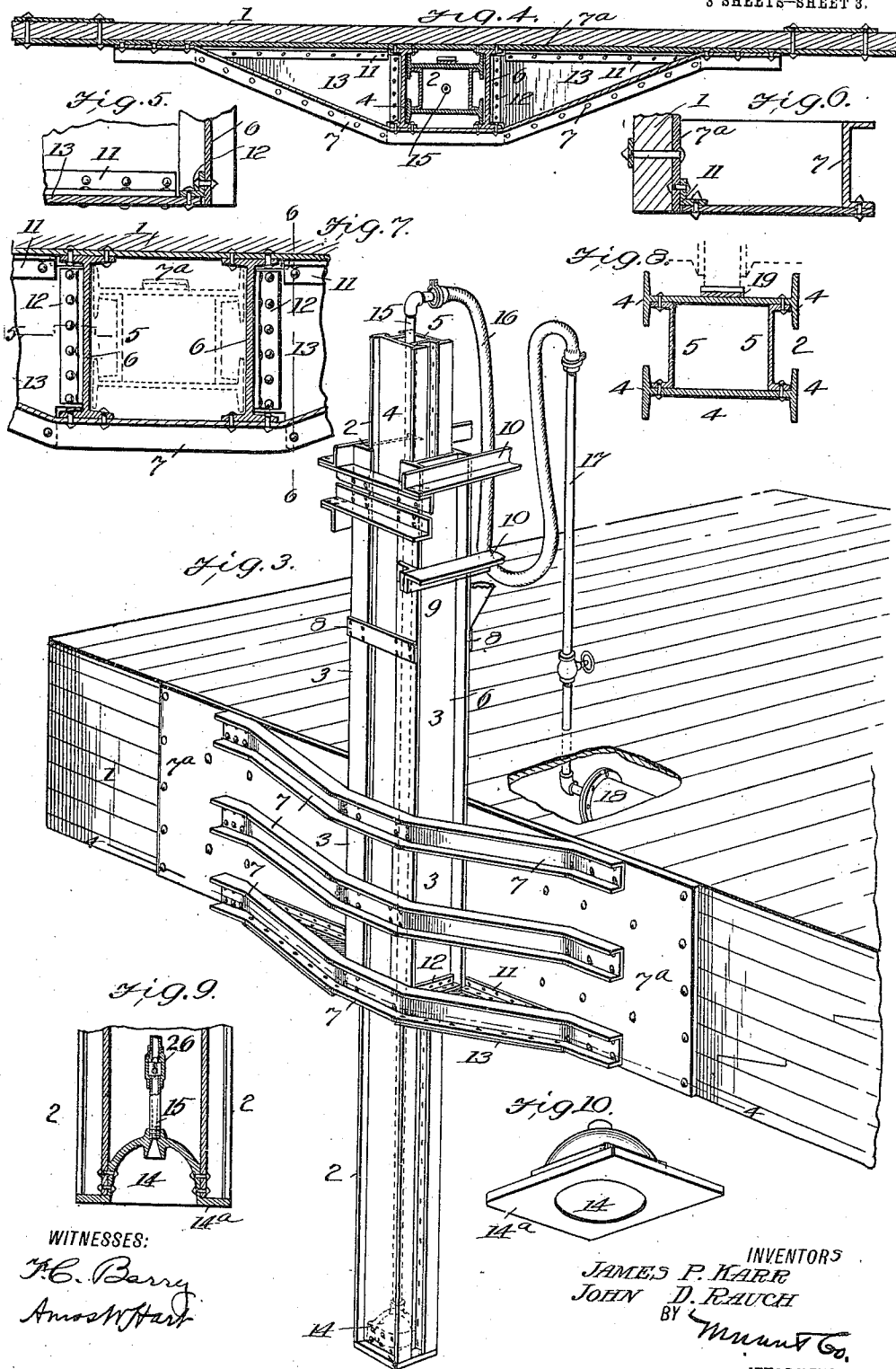
ATTORNEYS

J. P. KARR & J. D. RAUCH.
ANCHORING ATTACHMENT FOR FLOATING BARGES.
APPLICATION FILED JULY 2, 1910.

987,886.

Patented Mar. 28, 1911.

3 SHEETS—SHEET 3.



WITNESSES:

J. C. Barry
Amos Hart

INVENTORS

JAMES P. KARR
JOHN D. RAUCH

BY *Munn & Co.*
ATTORNEYS

UNITED STATES PATENT OFFICE.

JAMES P. KARR AND JOHN D. RAUCH, OF FORT WAYNE, INDIANA.

ANCHORING ATTACHMENT FOR FLOATING BARGES.

987,886.

Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed July 2, 1910. Serial No. 570,115.

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 Fort Wayne, in the county of Allen and State of Indiana, have invented certain Improvements in Anchoring Attachments for Floating Barges, of which the following is a specification.

Our invention pertains to improvements in vertical-spud attachments of floating barges for use in anchoring the latter in shallow water. We have devised a spud and spud guide or casing which combine maximum lightness, strength, and rigidity, and are comparatively inexpensive in manufacture; and we have provided the spud with a pneumatic attachment which greatly facilitates the operation of hoisting the same out of the mud.

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

Figure 1 is a front elevation of a floating barge provided with our improvement, the spuds being shown projected into the mud, as when used to serve as anchors; Fig. 2 is a side elevation of a portion of the dredge with one of the spuds projected as in use; Fig. 3 is a perspective view of a portion of the dredge-scow or barge with our improvements applied thereto and the spud being shown projected downward as when in use; Fig. 4 is a horizontal section on the line 4—4 of Fig. 3; Fig. 5 is a vertical section on the line 5—5 of Fig. 7; Fig. 6 is a vertical section on the line 6—6 of Fig. 7; Fig. 7 is a horizontal section of the spud guide or casing with fixed supports and attachments thereof; Fig. 8 is a horizontal section of the spud proper together with the rack attached thereto for use in lifting the same; Fig. 9 is a vertical central section of the lower portion of the spud, particularly illustrating the pneumatic attachment; Fig. 10 is a perspective view of the inverted cup-shaped air-receiver constituting the principal member of the pneumatic attachment.

In the several figures, 1 indicates a barge or scow constituting the hull of the dredge, and 2 indicate the spuds attached thereto, and guided in what may be termed casings 3, that are fixed on the sides of the scow adjacent to the bow thereof. As the result of long experience in the use of floating dredges with anchoring attachments, we have de-

vised a form of spud and also spud guide or casing which combine to a maximum degree lightness, strength, rigidity, and durability, as shown particularly in Fig. 8. The spud 2 is constructed of two steel I beams 4, which are arranged with their webs opposite and parallel, and these beams are connected by means of steel channel plates 5, whose flanges are bolted to the I beams adjacent to the heads of the latter so that the edges of the flanges abut said heads, as shown. This arrangement of parts has been found to form a very rigid structure. The backs of the channel plates are opposite and parallel, so that the four parts thus composing the spud form practically an elongated box. In this construction of the spud we avoid the use of angles and plates, also the use of any wood as a filler or reinforce, for the purpose of forming a smooth bearing surface. We likewise avoid the use of counter-sunk rivets, the rivets employed being applied in such a place that they may have full sized conical heads, so that their strength is not impaired. Besides, the heads of the rivets are accessible on the outside of the I beams. In practice, the channel plates will be provided with hand-holes to allow ready escape of water when the spud is being raised, and also to permit access to the air-pipe forming a part of the pneumatic attachment to be presently described.

The aforesaid spud 2 is arranged and guided in a casing constructed as shown in Figs. 4 and 7, that is to say, of two I beams 6, and side plates 7 and 7^a connecting the same. The plate 7^a is secured to the side of the scow or barge and the flanges of the inner heads of the I beams 6 are riveted thereto. The outer heads of the same are riveted to the channel beams 7, which, as shown in Figs. 2, 3, and 4, are bent at an obtuse angle and arranged horizontally and parallel, their ends being riveted to the barge plate 7^a. Thus the flanges of these bars 7 are on the outer side, and they combine maximum strength, lightness, and rigidity, and thus form most effective supports for the spud casing or guide.

At a point beyond the upper beam 7, the heads of the opposite I beams 6 are connected by narrow transverse plates 8, and at the head of the casing or guide other transverse angle plates 9 and 10 are bolted to the I beams for the purpose of holding them rigidly connected and also for supporting

the head of the casing or guide in connection with the barge, or its framework. It will be seen that the spud guide or casing is thus composed practically of two I beams with suitable transverse connections for holding them rigid in relative position. For supporting and bracing the lower end of the spud guide 3 more rigidly and with the least weight of metal, we apply angle plates 11, 12, as shown in Figs. 3, 4, 5, and 6, with triangular plates 13 whose edges are bolted underneath the angle irons 11, 12, and also to the lower flange of the lower brace bar 7.

By observation of Figs. 4 and 7, it will be seen that the outer flanges of the heads of the I beams 4 constituting part of the spud work in contact with the inner flanges of the heads of the I beams 6. Thus the heads of the I beams of both spud and guide serve as the contact members in the sliding or up-and-down movement of the spud.

Our improved pneumatic attachment is constructed and operated as follows:

A casing 14, see Figs. 3, 9, and 10, in the form a hollow cone or inverted cup, having a radial rim flange 14^a, is applied to the lower end of the spud 2, the cone or cup proper fitting into the chamber of the spud and its rim 14^a abutting the ends of the I beams 4 and channel plates 5. It is secured firmly in place by rivets passing through the channel plates and I beams. It is provided with an opening at the top which flares downward to provide for easy escape of mud that may enter the opening, and an air-pipe 15, provided with a flat valve at 26, see Fig. 9, extends upward through the spud and is connected by a flexible hose 16, see Fig. 3, with a rigid pipe 17 forming an attachment of a compressed-air tank 18.

As a means of raising and lowering the spud by mechanical means, we propose to employ a suitable apparatus, but in Fig. 8, we show in section a rack-bar 19, attached to one of the I beams 4, and in practice a pinion, operated from the engine on the barge, will engage and serve to raise and lower the spud. It is often extremely difficult to raise the spud since it is forced into the mud and thus a vacuum is formed when the spud is withdrawn, which vacuum must be added to the weight of the spud and the friction of the spud in the casing in the operation of lifting it. In order to relieve such vacuum and also to apply a positive lifting force, the air from the pressure tank 18 is allowed to enter the cup or receiver 14, thus supplying the vacuum and forming a cushion therein whose pressure corresponds to the pressure in the tank. This aids greatly in forcing the spud upward, and if any air escapes from the bottom of the spud it further facilitates the withdrawal of the spud.

The pneumatic attachment adds little to

the cost, and nothing appreciable to the weight of the spud, while it greatly aids in the operation of the latter.

What we claim is:

1. The combination with a barge of an anchoring attachment comprising a spud proper and guide therefor arranged vertically, the spud being formed of parallel I beams, and parallel channel plates arranged within the heads of the I beams and riveted to the latter, and the guide formed of parallel I beams, and rigid transverse connections, the heads of the spud beams working in sliding contact with the inner flanges of the guide beams, substantially as described.

2. The improved spud for the purpose specified formed of two steel beams arranged with their edges opposite and two channel plates arranged with their backs opposite and their flanges riveted to the webs of the I beams adjacent to the heads of the latter, as shown and described.

3. An improved spud composed of steel I beams arranged opposite and steel channel plates arranged between and bolted to the beams, the flanges of the channel plates abutting the heads of the I beams, as shown and described.

4. The combination with a barge having a metal plate secured to its side, of a vertical spud guide comprising two I beams arranged with their webs opposite and their heads on one side being in contact with the barge and plate and bolted thereto, and bars connecting the said I beams transversely, certain of said bars being attached at their ends to the barge and plate and extending across and bolted to the outer heads of the I beams, substantially as described.

5. The combination with a barge and a metal plate secured thereto, of a vertical-spud guide, and obtuse-angled channel bars secured to the outer sides of the spud guide, and also to the barge plate and barge, substantially as described.

6. The combination, with a plate secured to the side of a barge and a vertical-spud guide bolted thereto, of brace beams having an obtuse angle and extending across the lower portion of the spud guide and secured at their ends to the barge and plate, and ties and braces for the foot of the casing, the same comprising angle plates 11 and 12, and triangular plates 13 bolted together and to the barge plate, the casing, and the transverse braces, substantially as described.

7. A vertical-spud and guide therefor having a pneumatic lifting attachment comprising an inverted cup-shaped air receiver applied to the lower end of the spud, and having an opening in its top, and an air pipe connected therewith, and extending in practice to a compressor whereby air may be forced in to cushion and aid in lifting the spud, as shown and described.

8. The combination with a spud comprising I beams and channel plates riveted thereto and connecting with an air receiver having conical form and adapted to fit between the side of the beams and channel plates to which it is secured, and provided with a rim or radial flange extending out on the adjacent parts, substantially as described.
- 10 9. The combination with a vertically slidable hollow spud, and a vertically fixed guide therefor, of a cup-shaped air receiver arranged at the lower end of the spud, an air-pipe with a check valve attached thereto and extending above the top of the spud, a flexible air-pipe connected with the first-named pipe, and also with an air-pressure tank, substantially as described.

JAMES P. KARR.
JOHN D. RAUCH.

Witnesses:

H. J. AUDROSEN,
PAUL J. KNOTHE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
