

F. P. EASTMAN.
COMBINATION DREDGE AND CONVEYER
APPLICATION FILED SEPT. 8, 1909.

967,741.

Patented Aug. 16, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

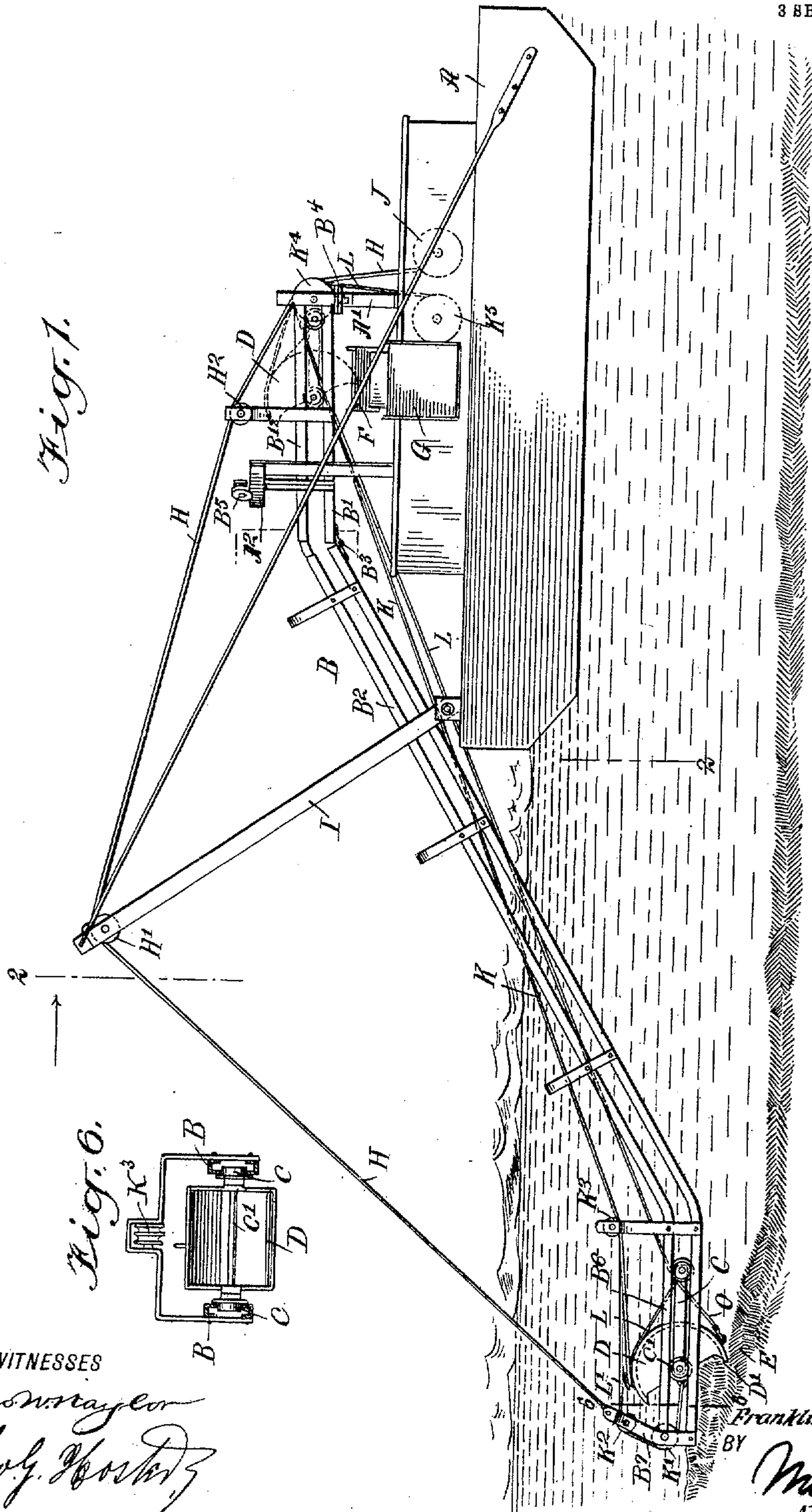
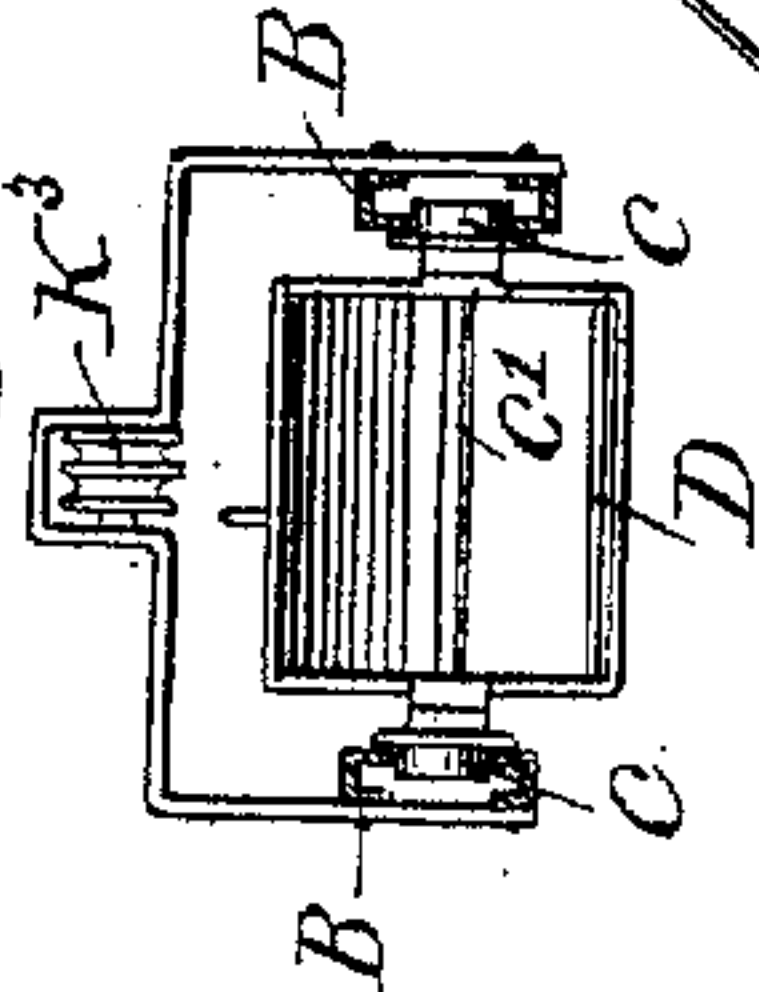


Fig. 6.



WITNESSES

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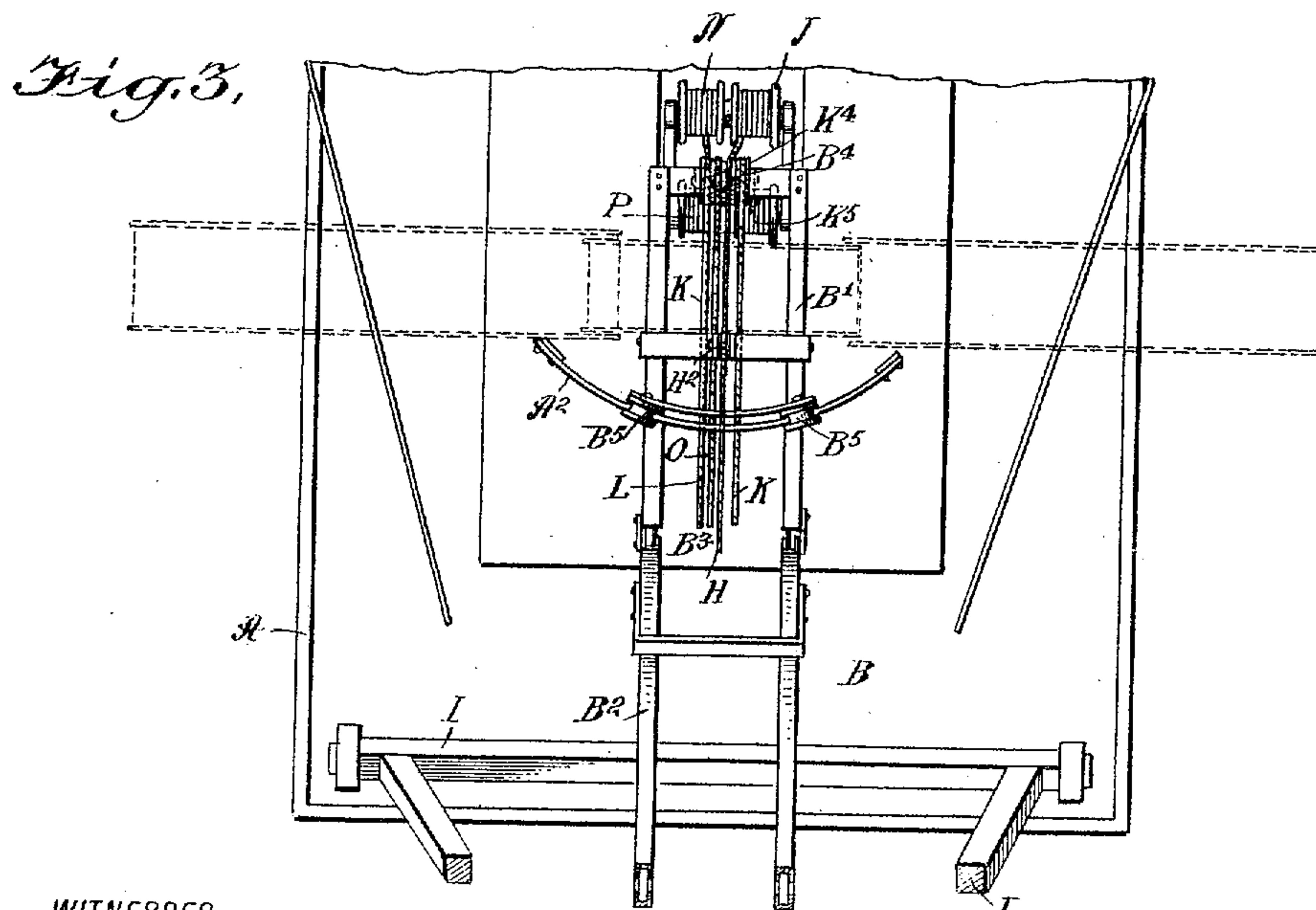
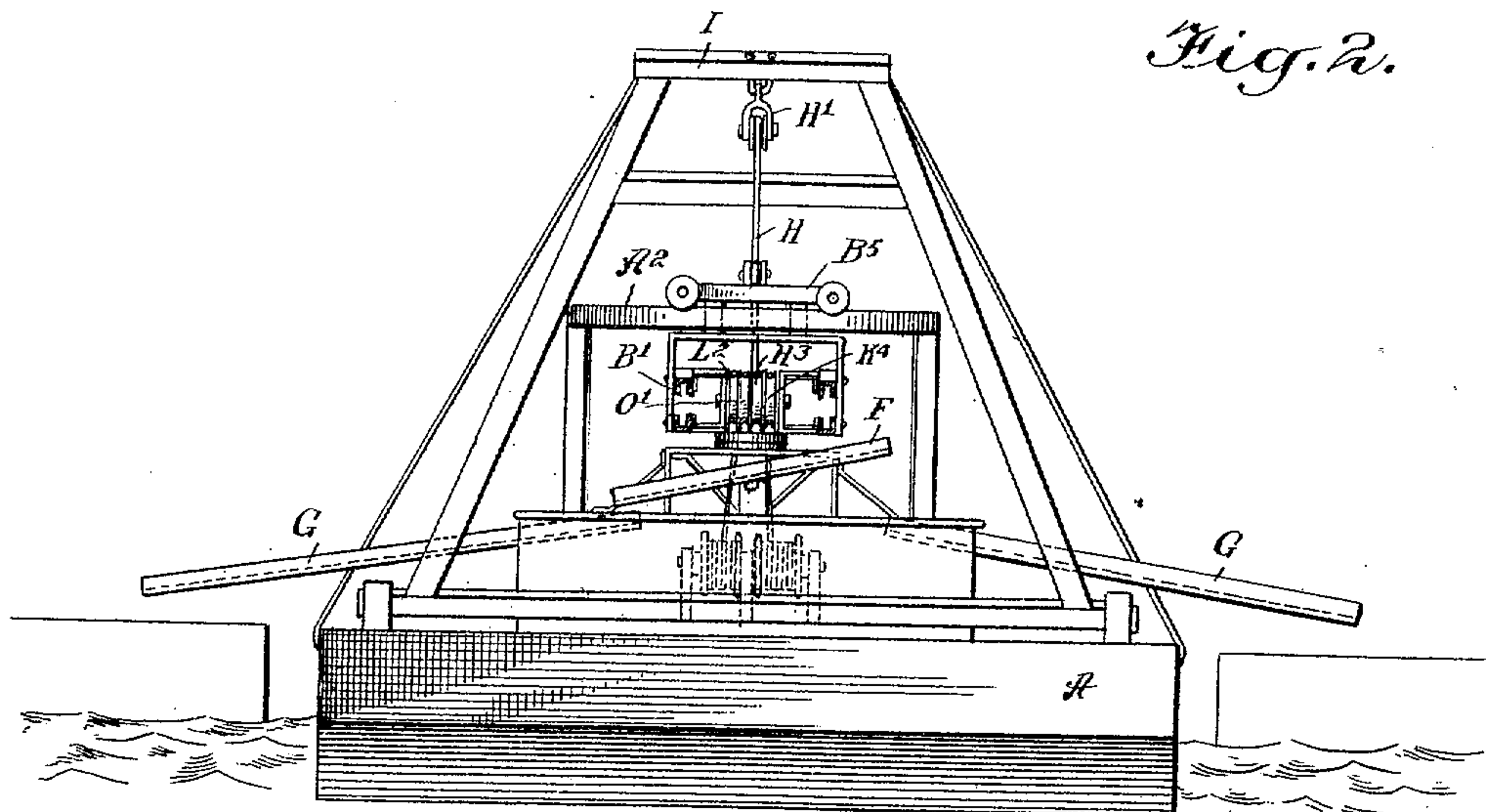
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 4.

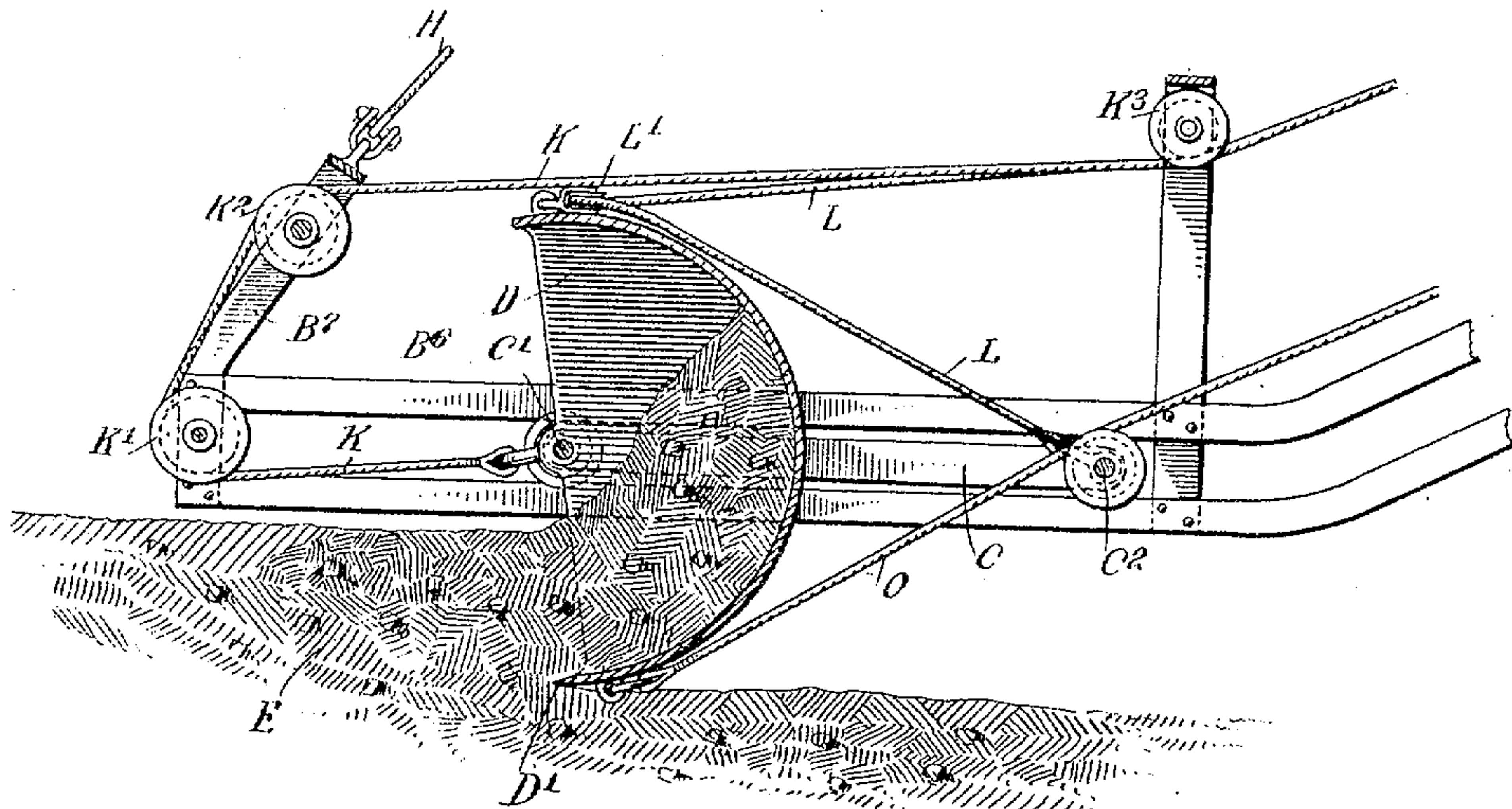
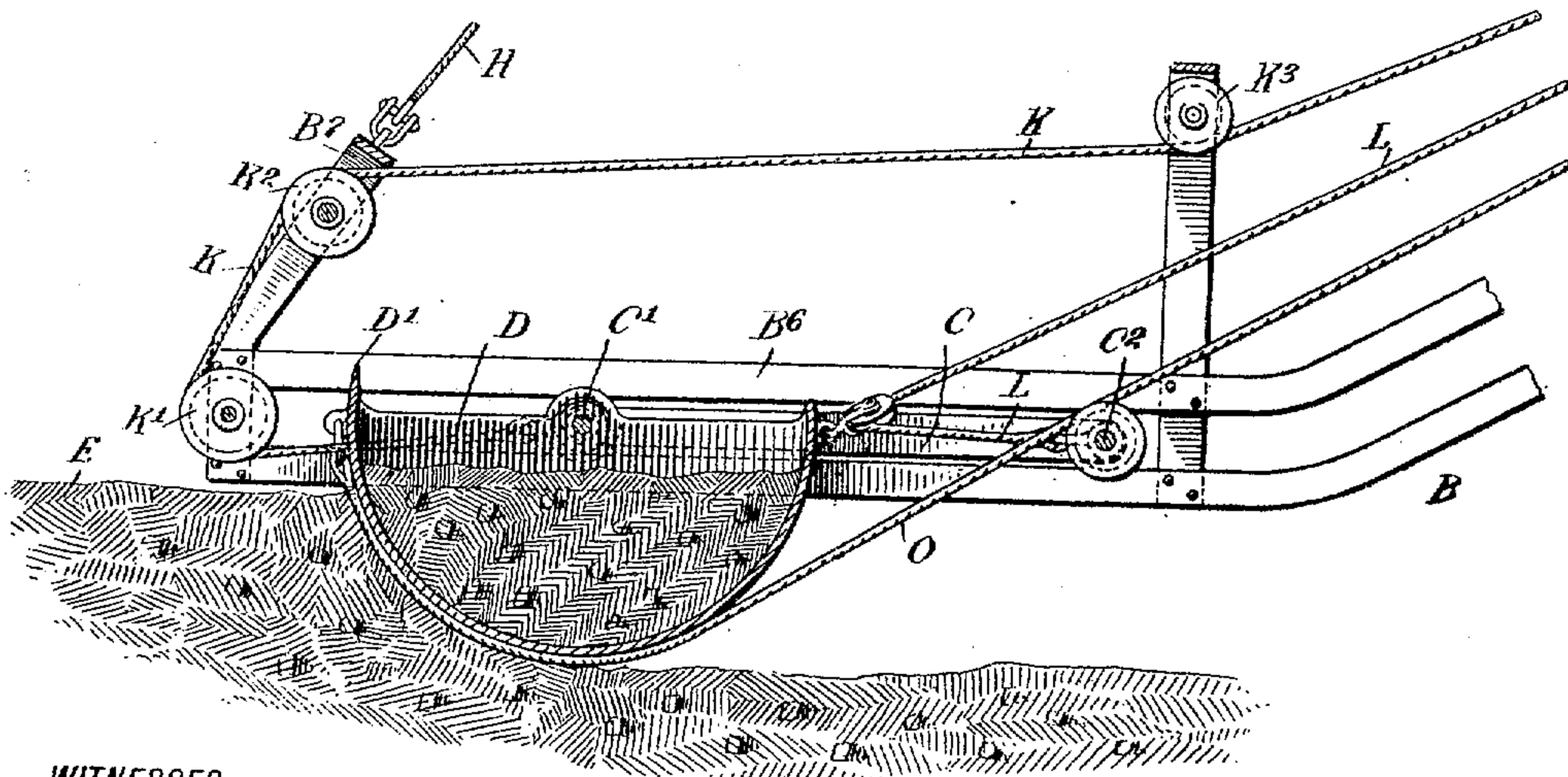


Fig. 5.



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UNITED STATES PATENT OFFICE

FRANKLIN P. EASTMAN, OF NEW YORK, N. Y.

COMBINATION DREDGE AND CONVEYER.

967,741.

Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed September 8, 1909. Serial No. 516,699.

To all whom it may concern:

Be it known that I, FRANKLIN P. EASTMAN, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Combination Dredge and Conveyer, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved dredge and conveyer, more especially designed for dredging harbors and other water-ways of soft or hard material, and arranged to insure a ready and easy filling of the bucket and hauling the same, without danger of spilling the contents, to the place of discharge.

For the purpose mentioned, the bucket is mounted to turn and to travel, the bucket with the mouth in an approximately vertical position being drawn forward into engagement with the material to be removed, and when filled the bucket is given a quarter turn to retain the filled material, after which the bucket is returned to the place of dumping and again turned to discharge its contents.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improved machine mounted on a floating vessel and showing the bucket in filling position; Fig. 2 is a cross section of the same on the line 2—2 of Fig. 1; Fig. 3 is a plan view of the same, parts being in section; Fig. 4 is an enlarged sectional side elevation of the bucket, the guideway and the operating parts for the bucket in position for holding the bucket in filling position; Fig. 5 is a like view of the same and showing the bucket in filled position; and Fig. 6 is a cross section of the guideway, carriage and bucket in position thereon, the section being on the line 6—6 of Fig. 1.

As illustrated in Fig. 1, the combination dredge and conveyer is mounted on a floating vessel A, but other supports may be employed. A guideway B is mounted to swing laterally on the deck of the floating vessel A, and on the said guideway B travels a carriage C, in which is mounted to swing a bucket D, approximately semicircular in longitudinal section and adapted to be

drawn into the material E to be dredged at the time the mouth of the bucket D extends forward in an approximately upright position, as shown in Figs. 1 and 4, the bucket during this forward movement filling with the material, to be then righted or moved into normal position, as shown in Fig. 5. The carriage C with the filled bucket held thereon is then drawn inward to the floating vessel A (see dotted lines in Fig. 1), and the bucket D is then turned into dumping position to dump its contents onto a tiltable platform F, extending transversely of the vessel A, to deliver the material to either side onto a chute G, leading to a dumping scow or other receptacle employed for carrying the material to a place of discharge.

The guideway B is made in two main sections B' and B², connected with each other by hinges B³, the inner guideway section B' extending horizontally and being pivoted at B⁴ on a frame-work A' erected on the deck of the vessel A. The forward end of the guideway section B' is provided with overhead pulleys B⁵ traveling on a segmental track A², erected on the vessel A, as plainly indicated in Figs. 1, 2 and 3. The outer section B², when in working position, extends downward and outward past one end of the vessel A, and the forward end B⁶ of the guideway B² extends approximately in a horizontal position at the time the machine is at work. The terminal of the horizontal portion B⁶ is provided with an upwardly-extending arm B⁷, to which is secured one end of a cable H, extending upward and inward, and passing over a guide pulley H', journaled on the A-frame I mounted on the vessel A, and of the usual construction. The cable H, after leaving the guide pulley H', extends over guide pulleys H², H³, mounted on the guideway section B', the cable finally passing to a drum J mounted on the vessel A and driven by suitable machinery. Thus by revolving the drum J the section B² can be swung down or up according to the position of the material to be removed.

The carriage C is provided with front and rear wheels traveling on the guideway B, and on the axles C' of the front wheels is mounted to swing the bucket D, as plainly indicated in Figs. 4, 5 and 6, the bucket having its forward edge D' sharpened and projecting somewhat beyond the straight sides, so that the sharpened end readily digs

into the material E at the time the carriage C is drawn forward in the horizontal end B⁶ of the guideway B.

To the axle C' is secured one end of a cable K, extending first forwardly over pulleys K', K², journaled on the end B⁶ and the arm B⁷, the cable then extending rearwardly and passing under a guide pulley K³, to then pass over a guide pulley K⁴, journaled on the section B' adjacent to the guide pulley H³, previously mentioned, the cable then extending to a winding drum K⁵ mounted on the vessel A. When the drum K⁵ winds up the cable K, the carriage C is drawn outward in the guideway B. A second cable L is secured to the rear axle C² of the carriage C and then passes around a sheave L' mounted on the rear end of the bucket D, the cable L then extending inwardly and passing over a pulley L² mounted on the section B' of the guideway B, the cable then winding on the drum N, arranged on the vessel A. Thus when the cable L is wound up on the drum N, the bucket D is drawn from the filled position shown in Fig. 4 into the normal position shown in Fig. 5, and a further winding up of the cable L causes the carriage C with the filled bucket D thereon to travel inward on the guideway B to the dumping position on board the vessel A. A third cable O extends around the bottom of the bucket D, to connect with the forward end thereof, and this cable O passes over a guide pulley O', arranged adjacent to the pulley H³, to then wind on a drum P on the vessel A and under the control of the engineer in charge of the machine, so that when the cable O is wound up it swings the bucket D into open or filling position, as indicated in Fig. 4, and holds it in this position during the time the bucket D is drawn forward along the horizontal end B⁶ of the guideway B, for filling the bucket with the material E to be removed.

When the machine is in use the carriage C is drawn forward along the guideway B by winding up the cable K, as previously explained, and the other cables L and O unwinding correspondingly. When the bucket D reaches the beginning of the horizontal portion B⁶, then the cable O is wound up, to swing the bucket D into the filling position indicated in Figs. 1 and 4, so that on the further forward movement of the bucket D, the latter takes up the material E, the bucket being held from turning by the cable L, controlled correspondingly by the operator manipulating the drum N. When the bucket D is filled, the cable L is wound up to right the bucket D, that is, to swing the same into the normal position shown in Fig. 5, it being understood that at the same time that the cable L is wound up, the cable O is slackened, to allow the bucket D to return to its normal position. A further

winding up of the cable L now causes the carriage C and with it the bucket D, to travel inward along the guideway B, until the bucket D reaches a position over the platform F, and then the bucket is again tilted by winding up the cable O correspondingly, so that the contents of the bucket D are discharged onto the platform F, from which the material slides down onto the corresponding chute G, delivering the material to a scow or the like. The platform F is pivoted at its middle on the vessel A, to allow of tilting the platform to either side, as will be readily understood by reference to Fig. 2. After the contents are dumped, the bucket D is again moved forward on the guideway B, and in the meantime the guideway is swung laterally, so that when the bucket reaches the horizontal portion B⁶, the bucket is opposite another embankment of material E, so that the bucket can be again filled, as above described, and returned for dumping. Thus by the arrangement described, the material can be removed in layers, leaving the surface level. It will also be understood that by the arrangement described a large area of material can be removed without requiring shifting of the vessel A, as the guideway B can be swung laterally and the forward section B² can be lowered to the required depth. It will also be noticed that by the arrangement described material under piers or in other comparatively inaccessible places can be readily reached and removed, but it is understood that the machine may be used on land, being mounted on a suitable support instead of a floating vessel, as described and shown.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A combination dredge and conveyer, comprising a bucket mounted to swing and to travel bodily to and from the material to be removed, means for drawing the bucket forward and backward, the bucket on its forward movement passing into the material at the time the mouth of the bucket is in an approximately vertical position, and means for returning the bucket to normal upright position.

2. A combination dredge and conveyer, comprising a support, a boom mounted to swing on the said support and provided with guideways, a bucket of approximately semicircular shape, and a carriage adapted to travel in the said guideways and on which the bucket is mounted to turn from a normal upright position to a filling position, the mouth of the bucket standing approximately vertical during the filling operation, means for moving the carriage forward and backward on the said guideways, and means for turning the said bucket into filling posi-

tion and holding it therein during the forward filling movement of the bucket.

3. A combination dredge and conveyer, comprising a support, a bucket, a guideway
5 for the said bucket to travel on, the guideway being made in sections hinged together, one section being pivoted on the said support to swing laterally, and means for supporting the free end of the other section and
10 allowing the same to swing laterally with the said pivoted section.

4. A combination dredge and conveyer, comprising a support, a bucket, a guideway
15 for the said bucket to travel on, the guideway being made in sections hinged together, one section being pivoted on the said support to swing laterally and the free end of the other section being approximately horizontal when in working position, and means
20 for supporting the free end of the other

section and allowing the same to swing laterally with the said pivoted section.

5. A combination dredge and conveyer, comprising a support, a guideway mounted
25 on the said support, a bucket mounted to travel on the said guideway, a tilting platform on the said support for receiving excavated material from the said bucket, and
30 chutes on the said support and extending beyond the sides thereof, the inner ends of the chutes extending under the ends of the said platform for receiving the material therefrom.

In testimony whereof I have signed my name to this specification in the presence of
35 two subscribing witnesses.

FRANKLIN P. EASTMAN.

Witnesses:

THEO. G. HOSTER,
JOHN P. DAVIS.