

(No Model.)

2 Sheets—Sheet 1.

A. McK. WYLIE.

PONTOON TRANSFER BRIDGE FOR DIKES OR CANALS.

No. 579,813.

Patented Mar. 30, 1897.

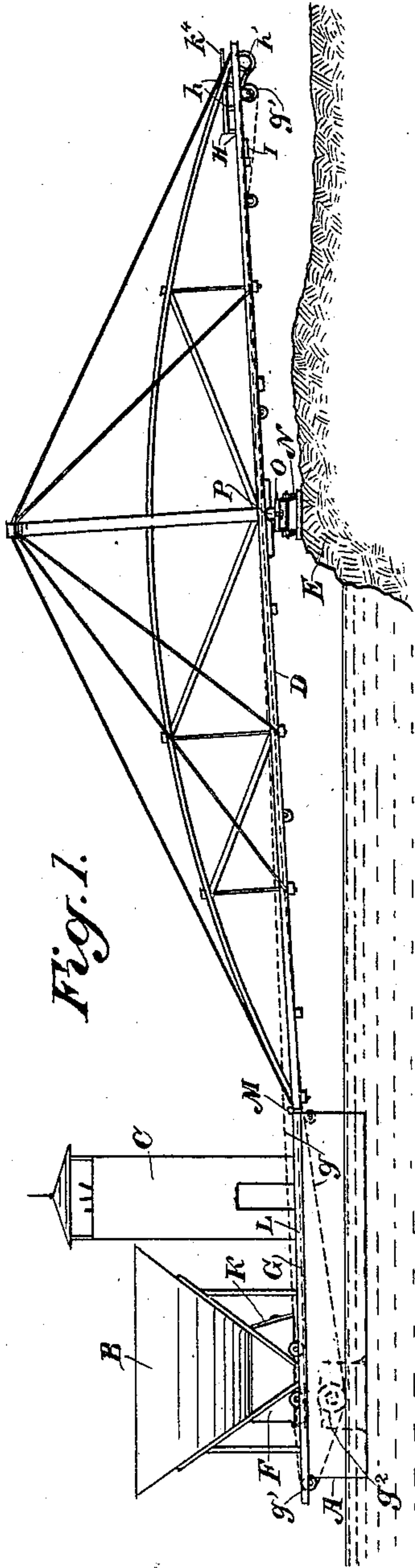


Fig. 1.

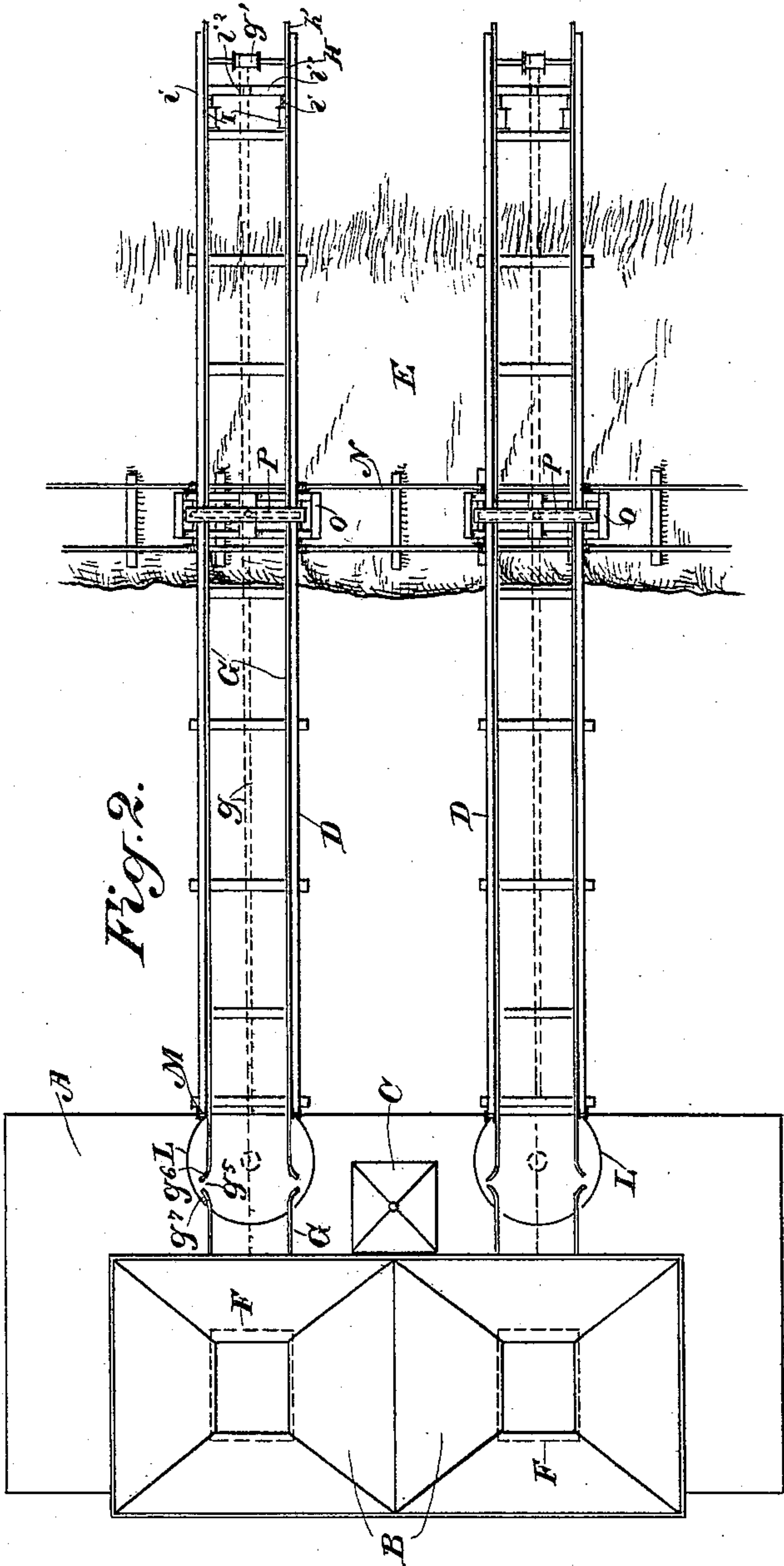


Fig. 2.

Witnesses,
J. H. Morse
J. F. Aschbeck

Inventor,
Alexander McK. Wylie
By Dewey & Co.
attn

(No Model.)

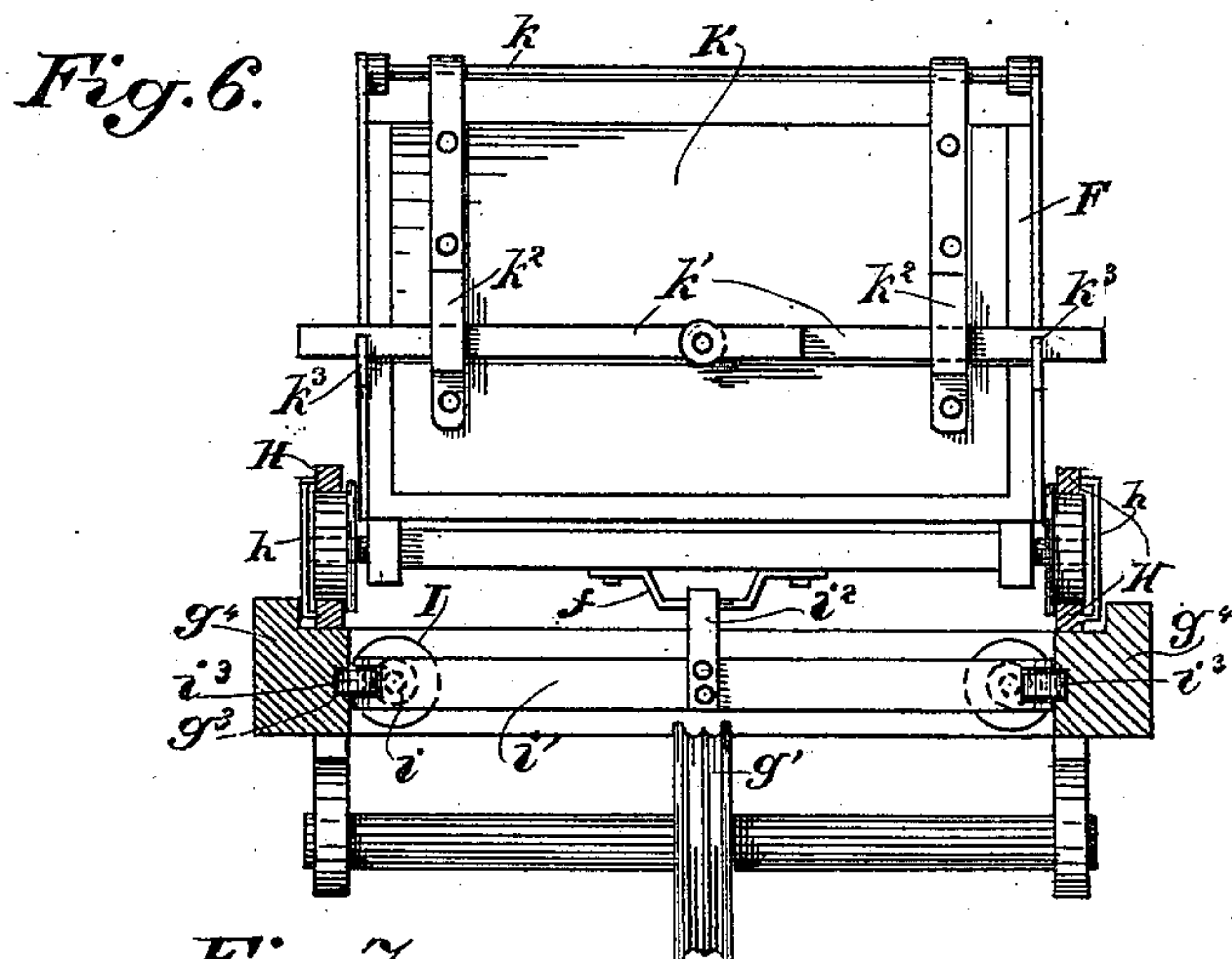
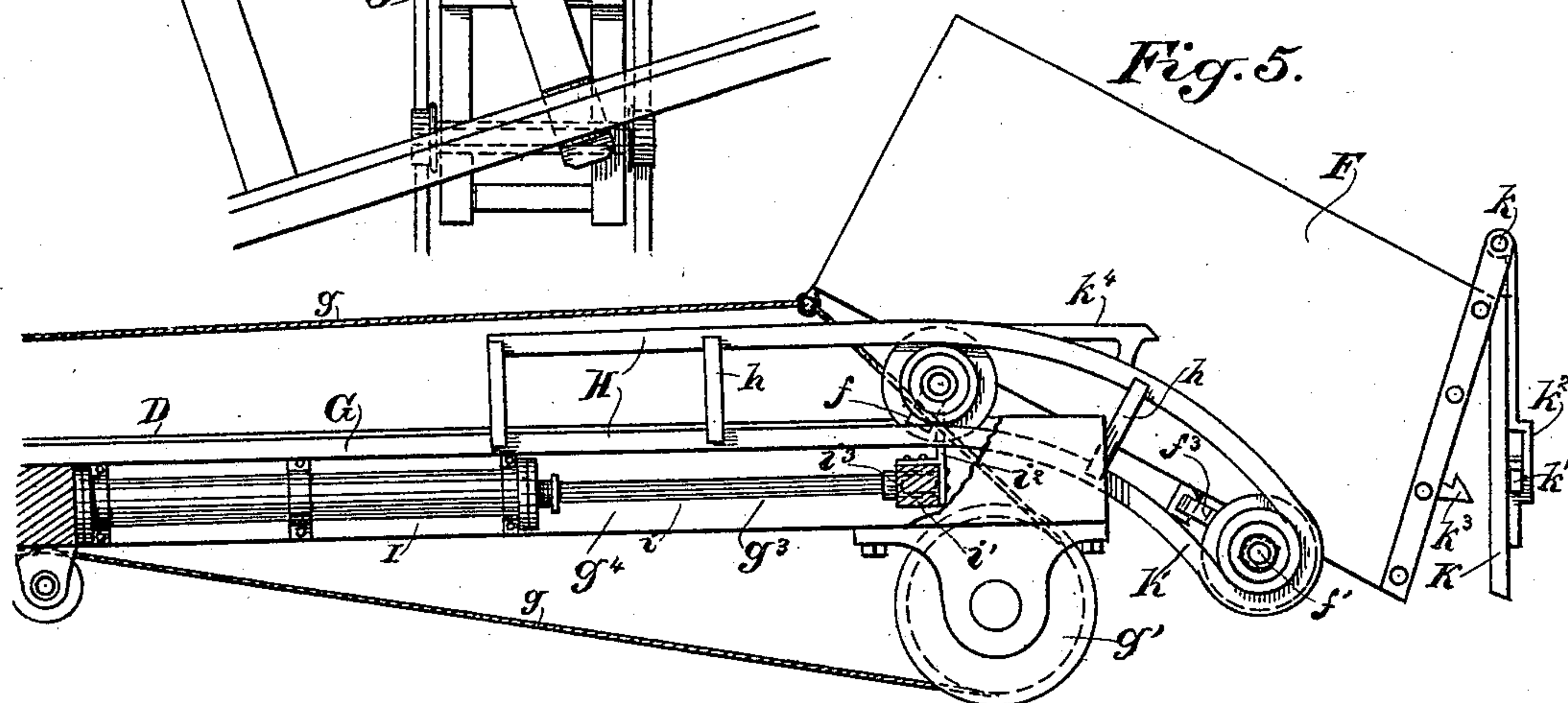
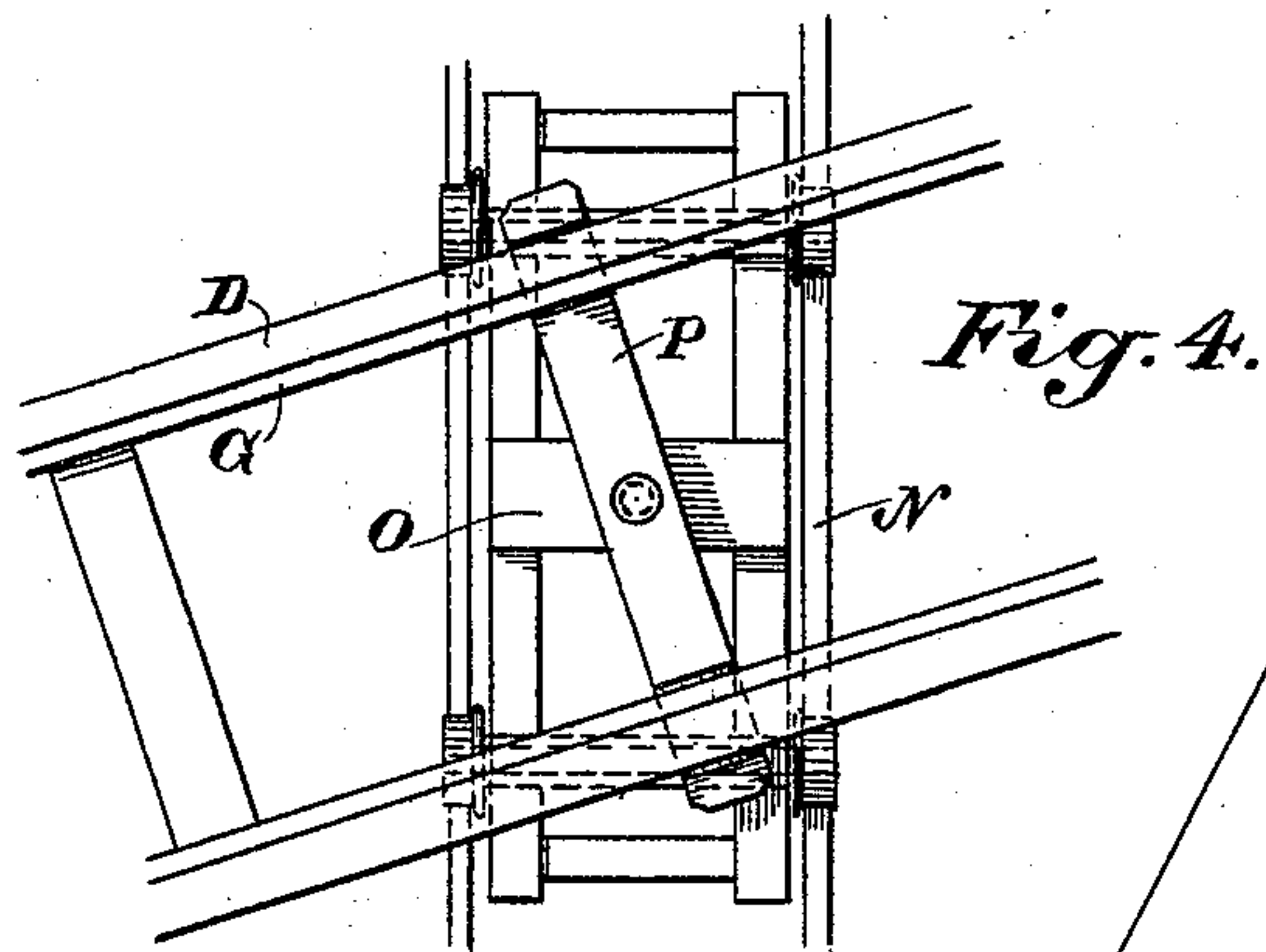
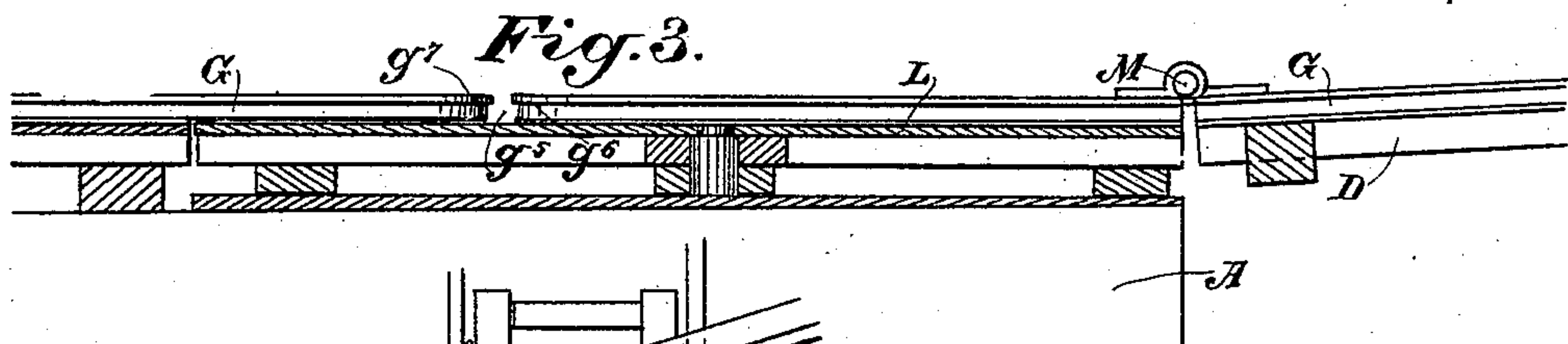
2 Sheets—Sheet 2.

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PONTOON TRANSFER BRIDGE FOR DIKES OR CANALS.

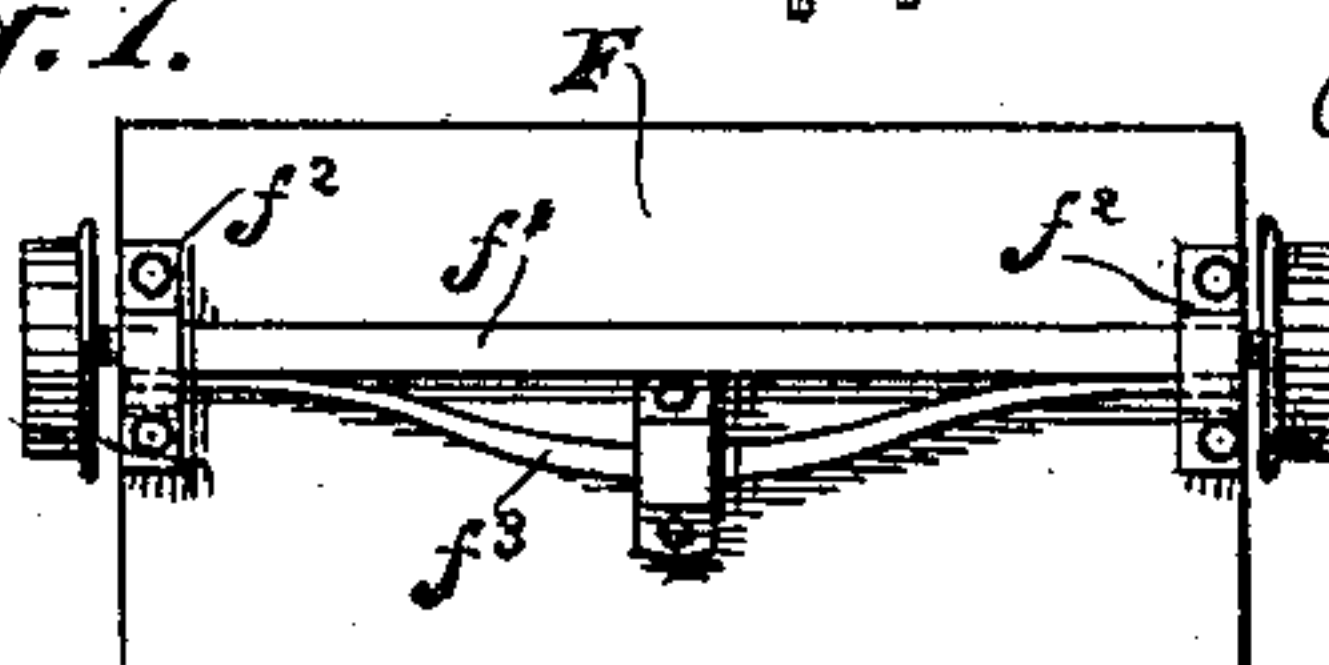
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Fig. 7.



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UNITED STATES PATENT OFFICE.

ALEXANDER MCKAY WYLIE, OF STOCKTON, CALIFORNIA.

PONTOON TRANSFER-BRIDGE FOR DIKES OR CANALS.

SPECIFICATION forming part of Letters Patent No. 579,813, dated March 30, 1897.

Application filed October 21, 1896. Serial No. 609,536. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER MCKAY WYLIE, a citizen of the United States, residing at Stockton, county of San Joaquin, State of California, have invented an Improvement in Pontoon Transfer-Bridges for Dikes or Canals; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the general class of apparatus used in making or dredging of water-courses, canals, ditches, and other excavations and the forming in connection therewith of dikes and embankments bordering said work.

My invention consists of the parts and the constructions and combinations of parts hereinafter described and claimed.

The object of this apparatus is to follow up and act in conjunction with the dredging-machines to receive the dredged material therefrom and automatically transport it to and over and beyond the dike or embankment. In the work of making or dredging such water-courses, as above mentioned, it is common for the dredgers to advance along the work and deposit the dredged material upon the borders to form the dikes or embankments. In the use of my device it is intended that one dredger shall proceed close to the border and shall throw up the dike or embankment by its own discharge mechanism and upon the grade desired. Following this dredger shall be another dredger, but out of line with the course of the first, that is to say, farther out in the line of the work, and as said second dredger may be too far to deposit its dredged material beyond the bank made by the first I intend that my apparatus shall operate in conjunction with this second dredger and in a line nearer the bank, so that it shall receive the material from said second dredger and automatically transport it over and beyond the bank or dike made by the first dredger, and in case more dredgers are used my apparatus will be used with each succeeding one and will be used with dredgers operating on the other bank.

Figure 1 is a side view of my pontoon transfer-bridge. Fig. 2 is a top view of same. Fig. 3 is a section of the turn-table. Fig. 4 is a detail view of the adjustable support for the

bridge on the bank. Fig. 5 is a side view of the automatic car-discharging mechanism. Fig. 6 is an end view of same. Fig. 7 is a bottom view of the car, showing the spring-adjusted front axle.

A represents a pontoon or float of any suitable character and provided with all the necessary means for controlling it. Upon this float is a hopper B, or a plurality of hoppers, and for the sake of illustration I have here shown two hoppers. Upon the float is also a suitable tower C for the operator, said tower being high enough to enable him to see down into the hoppers and over them, so that he can see the dredger working beyond, and he can also see the whole of his apparatus and can thereby observe the proper working of all the parts.

The surface of the float is made with a slope to one side in order to provide for the necessary cleansing by washing of its deck. Extending from this float is a bridge D, or there may be, as here shown, a plurality of bridges, two being illustrated for the sake of this description. These bridges extend to and rest upon the embankment E, which has been previously made along the border of the work, and their inner ends are long enough to project beyond said embankment.

The bridges are of any suitable and approved construction to combine lightness with strength.

F are cars which are adapted to pass under the hoppers and to receive the material from said hoppers directly from the dipper of the dredger, so that said hoppers simply act as funnels to enable the dipper of the dredger to direct its load into the cars, and said cars have capacity enough to take a full dipper-load. These cars travel upon track-rails G on the pontoon and on the bridges, and they are adapted to be moved to and fro by means of any suitable driving mechanism, which I have herein indicated as a cable g , attached at both ends to the cars, one cable to each car, and said cable thence extends around suitable terminal sheaves g' on the pontoon and at the inner ends of the bridges, and it is driven by means of suitable driving mechanism, as indicated at g^2 , within the pontoon. This driving mechanism may be supposed to be and is directly under the control of the

operator in the tower by means of suitable and ordinary connections, unnecessary herein to show, as it will be readily understood from what has been described that the cars
5 may be propelled from under the hoppers, over the pontoon, and over the bridges to the inner ends thereof, and then be pulled back again. Now in order to automatically dump the cars at the inner ends of the bridges I have
10 the following construction:

Secured to the inner ends of the bridges are placed guide-rails II, one above and one below and connected by suitable ties h . These guide-rails have downwardly-curved extensions h' projecting beyond the bridge ends.
15 There is a pair of these guide-rails on the inner side of each side of each bridge, so that for each bridge there are two pairs of these guide-rails and they are disposed in vertical planes and lie in alinement with the track-rails G, on which the cars run. When the cars reach these guide-rails II, the wheels of the cars travel between the upper and lower
20 guide-rails and the forward wheels of the cars travel down the curved extensions h' of the guide-rails, thereby inclining the cars downwardly and throwing them into position to discharge their loads by gravity, and said loads are discharged beyond the bank E previously formed. Now in order to prevent the
30 cars from descending to this inclined position with too great force, as they are very heavy, I have on the inner side of each side of each bridge a pneumatic cylinder I, the piston-rods i of which are connected by a cross-bar i' , from which projects upwardly a central arm i^2 . The cross-bar i' of the pneumatic piston-rods has its ends provided with
35 antifriction-rollers i^3 , which travel in side grooves g^3 in the rail-stringers g^4 , so that great accuracy of movement is attained.

On the rear axle of the car I have attached a downwardly-projecting bail f , which is adapted to come in contact with the arm i^2 and to
45 thereby, as the car advances, pull out the piston-rods of the pneumatic cylinders, which latter thus serve to check the car and hold it from descending with too great force. On the return movement of the car the bail f of
50 its rear axle simply leaves the arm i^2 and the pneumatic devices return to initial position, in the manner common to this class of devices, for a repetition of the operation with the car when it again approaches it. The
55 front axle f' of the car is adapted to have a sufficiently free movement in bearings f^2 under the car-body to enable it to turn slightly to adjust itself to the necessary courses of travel, and said axle is held to its adjustment
60 by means of a spring f^3 acting upon it.

In order to hold the material in the cars until it is ready to be dumped, I provide an end-gate K for each car, which is hinged to the end of said car above by suitable connections, as shown at k , and said gate lies at an
65 incline with the end of the car in order to adapt it to close by gravity. Pivoted latches

k' are attached to the gate, working in suitable guides k^2 and adapted to engage with catches k^3 on the end of the car-body. These
70 latches project beyond the sides of the car and are adapted to run out upon and in contact with straight bars k^4 , which begin just about the curved portion h' of the guide-rails II. Now when the car reaches this curved
75 portion the ends of these latches k' , traveling out on the straight bars k^4 , and the car itself following the curve h' of the guide-rails II, said latches are raised from their catches k^3 ,
80 and when the car tilts the weight of the material within it will open the now freed gate K and the contents will be discharged. As the car returns and the latches are freed of the straight bars the gate will swing closed
85 by gravity and the latches return to their engagement with the catches, thus providing for a complete automatic operation for the dumping and discharging of the cars.

It is necessary that adjustable connections be provided between the bridges and the pontoon to permit the movements of the latter as
90 it lies in the water and without communicating any strain to the bridges. These connections and devices are as follows: On the pontoon and in the line of rails G of the cars are
95 turn-tables L, having at their forward ends, one on each side, hinge connections M with the adjacent ends of the bridges, so that the pontoon and the bridges are thereby connected in such a way as to permit a relative
100 independent vertical movement, and by reason of the turn-tables a relative horizontal movement is also permitted, so that the pontoon may rise and fall and may swing or move horizontally in any direction without
105 affecting the bridges. The rails G, on which the car travels, must cross the turn-tables, and for this purpose and not to interfere with the necessary movement of the tables the rails are first severed at g^5 in the line of the
110 hinges M and the rails which lie upon the turn-table are curved or frogged outwardly at their inner ends, as seen at g^6 . The rails which lie upon the solid portion of the float or pontoon overlap the inner edge of the turn-
115 table and are free thereof, and the ends of said rails are curved or frogged outwardly, as shown at g^7 . These two curved adjacent ends of the rails provide for guiding the car-wheels to and from the turn-table with accuracy
120 within the limited arc of movement to which the turn-table is subjected, for the wheels will cross between the intervening space by running on the turn-tables by their flanges until they strike the rails again, which by
125 reason of their curves, or what may be termed their "frogs," will again engage the flanges and direct the wheels properly.

The bridges do not lie solidly upon the bank, but upon movable connections which are nec-
130 cessary to provide for the relative independent movements heretofore described.

N is a temporary track laid upon the bank E, and upon this are adapted to travel wheeled

trucks O, one for each bridge, said trucks having longitudinally disposed upon them centrally pivoted or swinging saddle-blocks P, upon which the bridges rest. Now as the
 5 connected ends of the bridges swing with the float or pontoon their bearing ends move back and forth with the trucks and swing with the pivoted saddle-blocks, so that the relative movements of the pontoon and bridges are
 10 such that each may take place with perfect independence and no strain be communicated to the bridges.

The operation of the apparatus briefly described is as follows: As before stated, a preceding dredger may be supposed to have
 15 thrown up the dike or embankment E, and a succeeding dredger may be supposed to be following the first, but in a different line. My apparatus is to be located between this second dredger and the bank, and said second
 20 dredger deposits its material from the dipper directly into the hoppers on my pontoon, making a deposit alternately in each hopper. The operator in charge of my apparatus has one
 25 of his cars always under the hopper at the time the dipper delivers its load, and consequently said car is loaded directly from the dipper. He then runs said car out over its bridge, and the car is automatically dumped of its load
 30 beyond the embankment and then returns for another load, and while this is being done the second car has been loaded and is being run out, and in due time it also is returned.

My apparatus may be duplicated in its parts
 35 as necessity requires and may be extended, or as many separate ones may be used as may be desired.

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

1. A pontoon transfer-bridge for dikes and canals consisting of a pontoon or float having a hopper to receive the spoils, track-rails thereon and extending beneath the hopper, a
 45 bridge connected with the pontoon or float and having track-rails in line with the rails thereon, a wheeled vehicle to travel on said rails and to receive the spoils directly from the hopper and means for effecting the travel of said
 50 vehicle from the pontoon or float, over the bridge and back again.

2. A pontoon transfer-bridge for dikes and canals consisting of a suitable pontoon or float, a bridge connected therewith and extending to and over the bank, a car adapted
 55 to receive the material to be transferred, from the dredger, means for effecting the travel of said car from the pontoon or float, over the bridge and back again, and means for automatically dumping said car at the inner end
 60 of the bridge, consisting of a swinging gate on the car, having a latch, and a trip on the bridge in the path of said latch and actuating the same.

3. A pontoon transfer-bridge for dikes and canals consisting of a suitable float or pontoon, a hopper thereon adapted to receive the

material from the dredging-machine, a bridge connected with said float or pontoon and extending to and over the bank, a car adapted
 70 to receive the material from the hopper on the float or pontoon, means for effecting the travel of said car from said float or pontoon, over the bridge and back again, and means at the end of the bridge for automatically effecting
 75 the discharge of the contents of said car, consisting of an incline down which the car runs, a swinging gate on the car, a latch on said gate and a trip in the path of the latch and actuating the same.

4. In a pontoon transfer-bridge for dikes and canals in which is employed a car adapted to receive the material from the dredger, and to travel from the pontoon, over a bridge
 85 extending from said pontoon to and over the bank, the means for dumping said car consisting of the spaced vertically-disposed guide-rails at the land end of the bridge and between which the wheels of the car travel, said guide-rails having downwardly-curved
 90 extensions projecting beyond the bridge and adapted to turn the car from the horizontal.

5. In a pontoon transfer-bridge for dikes and canals in which is employed a car adapted to receive the material from the dredger, and to travel from the pontoon, over a bridge
 95 extending from said pontoon to and over the bank, the means for dumping said car, consisting of the spaced vertically-disposed guide-rails at the land end of the bridge and between which the wheels of the car travel, said guide-rails having downwardly-curved
 100 extensions projecting beyond the bridge and adapted to turn the car downwardly, and a means for controlling the descent of the car over said curved portion consisting of the
 105 pneumatic cylinders with their pistons and sliding cross-head, said cross-head having a contact-arm, and a bail on the car for engaging the said contact-arm.

6. A pontoon transfer-bridge for dikes and canals, consisting of a suitable float or pontoon having a hopper for receiving the material from the dredger, a bridge connected
 115 with said float or pontoon and thence extending to and over the bank, a car adapted to receive the material from the hopper, and means for effecting the travel of said car from the pontoon or float, and thence over the bridge and back again, and the means for automatically dumping said car at the inner end
 120 of the bridge consisting of the spaced vertically-disposed guide-rails between which the wheels of the car travel, said guide-rails having downwardly-curved extensions projecting beyond the bridge.

7. A pontoon transfer-bridge for dikes and canals, consisting of a suitable float or pontoon, having a hopper for receiving the material from the dredger, a bridge connected
 130 with said float or pontoon and thence extending to and over the bank, a car adapted to receive the material from the hopper, and means for effecting the travel of said car

from the pontoon or float, and thence over the bridge and back again, and the means for automatically dumping said car at the inner end of the bridge consisting of the spaced
 5 vertically-disposed guide-rails between which the wheels of the car travel, said guide-rails having downwardly-curved extensions projecting beyond the bridge, and the means for controlling the descent of said car at the
 10 curved portion of the guide-rails, consisting of the pneumatic cylinders with their pistons and sliding cross-head having a contact-arm, and the bail on the car adapted to engage with said arm.

15 8. In a pontoon transfer-bridge for dikes and canals, and in combination with the pontoon or float, the bridge connected therewith and thence extending to and over the bank, a car for transferring the material from the
 20 pontoon over the bridge, said car having a discharge-gate at its end, and the means for automatically controlling said gate, consisting of the hinge connections by which the gate is adapted to close by gravity, the pivoted latches
 25 carried by the gate and adapted to engage with catches on the car end, the downwardly-curved guide-rails at the end of the bridge and in which the wheels of the car travel whereby said car is turned downwardly, and
 30 the straight bars with which the ends of the latches automatically engage as said car is turning downwardly whereby they are relieved of their catches and the gate freed.

9. A pontoon transfer-bridge for dikes and
 35 canals consisting of a suitable float or pontoon having a hopper to receive the material from the dredger, a bridge connected with said float or pontoon, and thence extending to and over the bank, a car adapted to receive
 40 the material from the hopper and means for effecting the travel of said car from the float or pontoon, over the bridge, the fixed guide-rails with downwardly-curved extensions at the inner or land end of the bridge and by
 45 which the car is turned downwardly, and a means for automatically closing and opening the car when turned downwardly, consisting of the swinging gate closing by gravity, the latches and the catches with which they en-
 50 gage and the fixed straight bars engaging the latches to automatically open them.

10. A pontoon transfer-bridge for dikes and canals consisting of a suitable float or pon-
 55 toon having a hopper to receive the material from the dredger, a bridge connected with said float or pontoon, and thence extending to and over the bank, a car adapted to receive the material from the hopper and means for effect-
 60 ing the travel of said car from the float or pontoon over the bridge, the fixed guide-rails with downwardly-curved extensions at the

inner or land end of the bridge and by which the car is turned downwardly, the means for automatically closing and opening the car when turned downwardly, consisting of 65 the swinging gate closing by gravity, the latches, and the catches with which they engage, and the fixed straight bars engaging the latches to automatically open them, and the means for controlling the descent of the 70 car consisting of the pneumatic cylinders with their piston-rods and sliding cross-head having a contact-arm, and the bail on the rear axle of the car engaging with said contact-arm. 75

11. In a pontoon transfer-bridge for dikes and canals, the combination, of a float or pon-
 toon, a bridge extending therefrom and capa-
 ble of movement in a vertical plane, a turn-
 80 table, track-rails on the pontoon or float and bridge, the rails on the former overlapping and independent of the turn-table, a hopper on the float, a vehicle to travel on said rails and to pass under the hopper, and means for operating the vehicle back and forth on the 85 rails.

12. In a pontoon transfer-bridge for dikes and canals, the combination of a suitable pon-
 toon or float, a bridge from the pontoon or
 float extending to and over the bank, a turn- 90 table on the pontoon or float and to which the bridge is connected, rails upon said pontoon or float and bridge, the rails on the former overlapping and independent of the turn-
 table and outwardly flaring, and rails upon 95 said turn-table in line with the rails on the bridge and having their ends adjacent to the rails on the pontoon outwardly curved or flared, and cars adapted to travel over said rails. 100

13. In a pontoon transfer-bridge for dikes and canals, the combination of a suitable pon-
 toon or float, a bridge hinged thereto and
 thence extending to and over the bank, a
 105 turn-table on the pontoon or float and to which the bridge is connected, rails upon said pontoon or float and bridge, the rails on the former overlapping and independent of the turn-table and outwardly flaring, rails upon
 110 said turn-table in line with the rails on the bridge and having their ends adjacent to the rails on the pontoon outwardly curved or flared, and cars adapted to travel over said rails, said cars having adjustable forward
 115 axles with controlling-springs.

In witness whereof I have hereunto set my hand.

ALEXANDER MCKAY WYLIE.

Witnesses:

S. H. NOURSE,
 JESSIE C. BRODIE.