

(No Model.)

2 Sheets—Sheet 1.

C. GULLMANN.  
DREDGING MACHINE.

No. 506,592.

Patented Oct. 10, 1893.

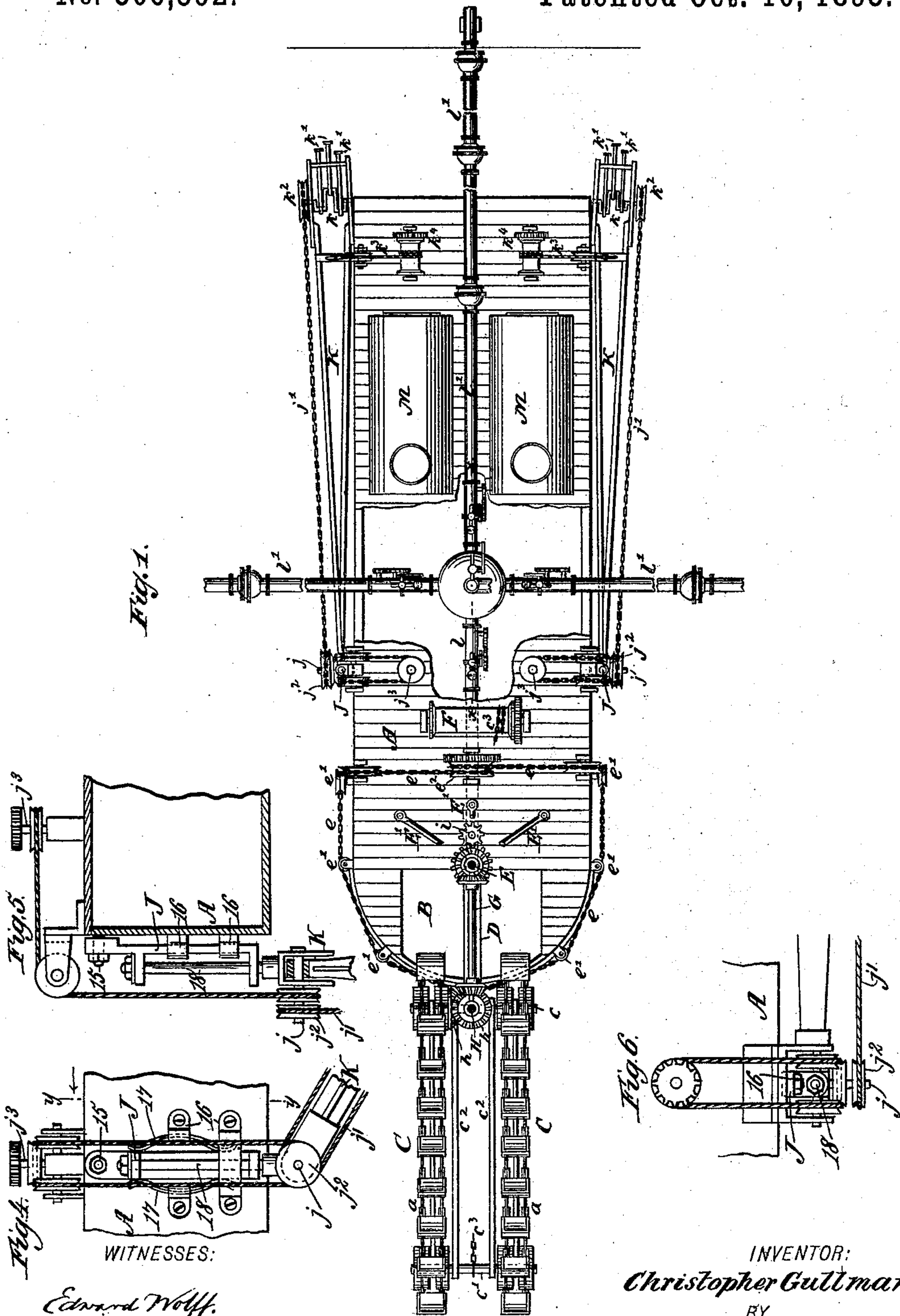


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

WITNESSES:

Edward Wolff.  
William Miller

INVENTOR:  
Christopher Gullmann.  
BY  
Van Santvoord & Hauck  
ATTORNEYS.

(No Model.)

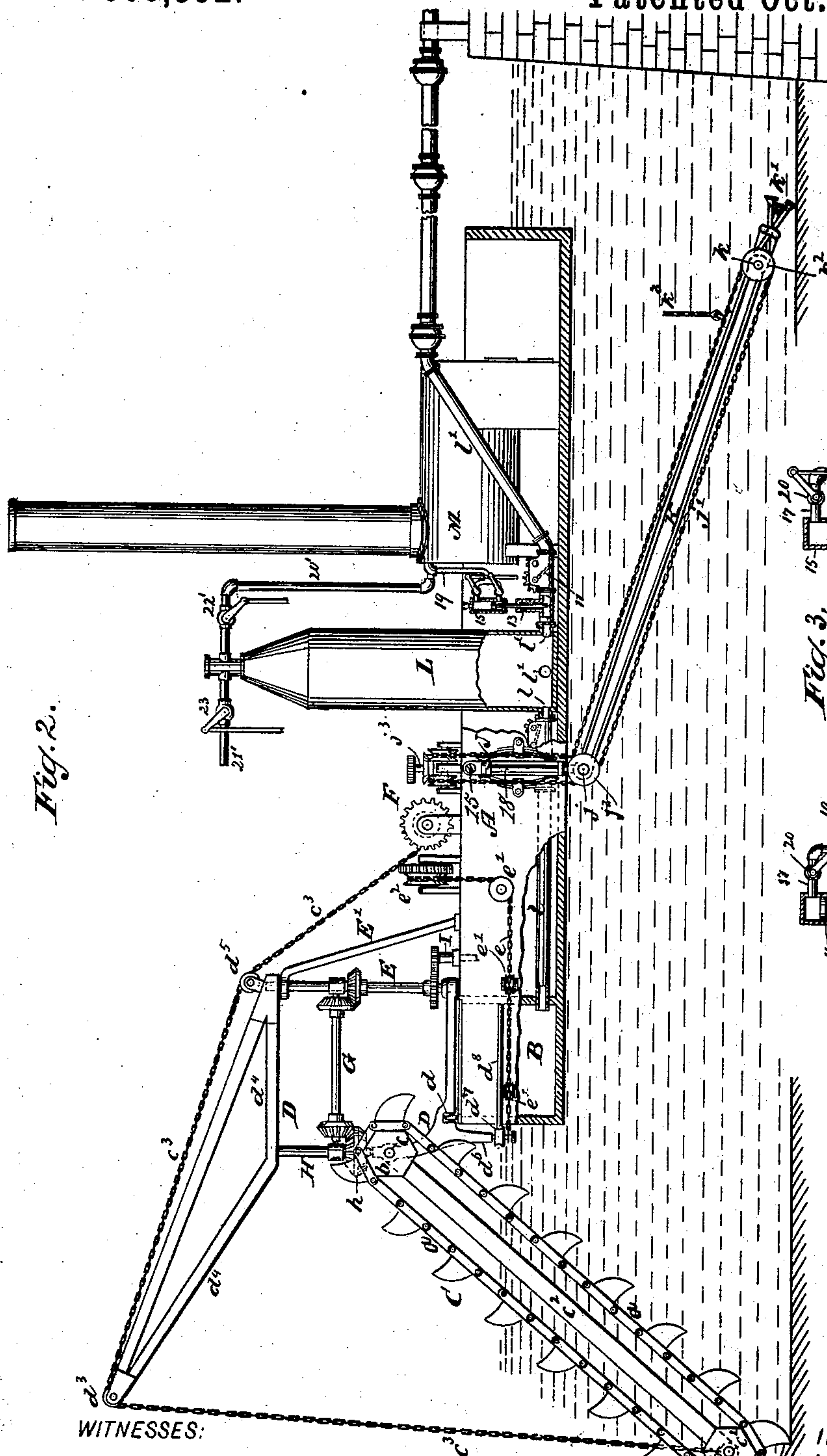
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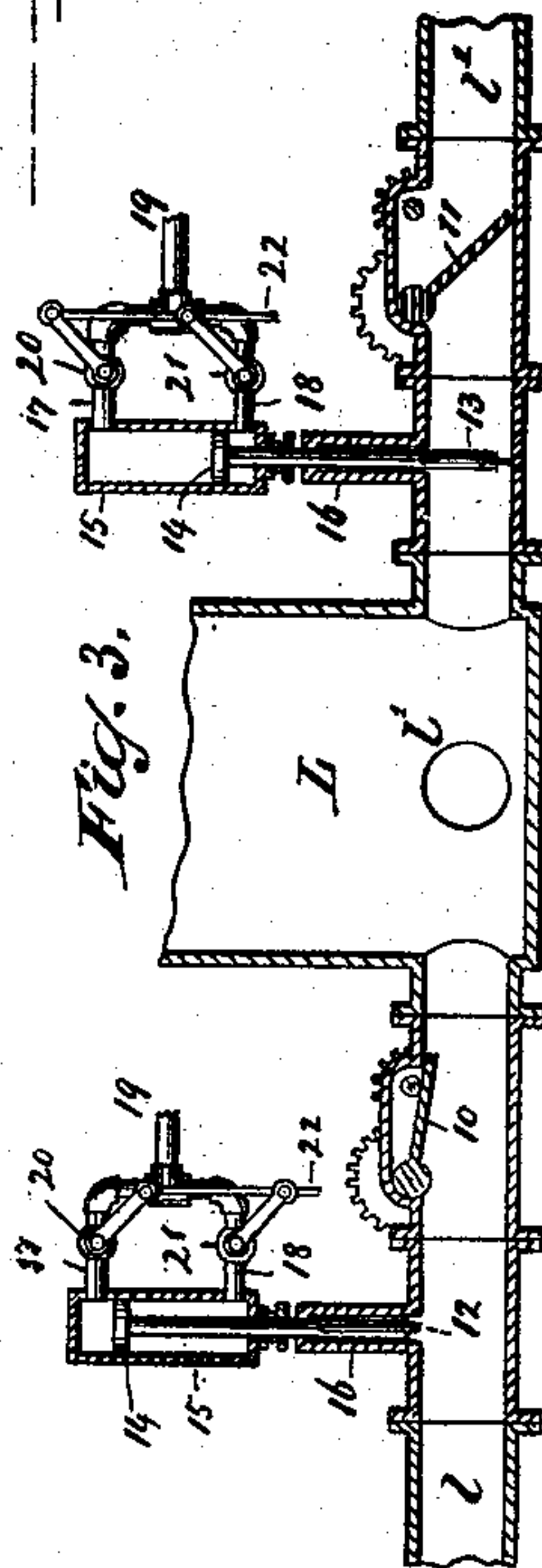
Fig. 2.



WITNESSES:

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Fig. 3.



INVENTOR:

Christopher Gullmann.

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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

CHRISTOPHER GULLMANN, OF NEW YORK, N. Y.

## DREDGING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 506,592, dated October 10, 1893.

Application filed October 20, 1892. Serial No. 449,458. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTOPHER GULLMANN, a citizen of the United States, residing at New York, in the county and State of New York, have invented new and useful Improvements in Dredging-Machines, of which the following is a specification.

This invention relates to certain improvements in dredging machines as pointed out in the following specification and claims and illustrated in the accompanying drawings in which—

Figure 1 represents a plan or top view. Fig. 2 is a side elevation partly in section. Fig. 3 is a partial longitudinal vertical section in the plane  $x-x$  Fig. 1 on a larger scale than the previous figures. Fig. 4 is a partial side elevation on a larger scale than the previous figures. Fig. 5 is a transverse vertical section in the plane  $y-y$  Fig. 4. Fig. 6, is a plan or top view.

In the drawings the letter A designates a scow which is provided with a compartment B intended to receive the dirt which is brought up from the bottom of the water by means of an elevator C. This elevator may be of any suitable construction and in the example illustrated in the drawings the elevator is constructed with two bucket carrying chains  $a-a$  which extend around drums  $b-b'$  mounted on shafts  $c-c'$ . The shaft  $c$  has its bearings in a frame D which is supported on a roller  $d$  and can be made to swing round the arbor E by means of a rope or chain  $e$  which is fastened to the frame D (see Fig. 2) and extends in opposite directions round a series of guide pulleys  $e'$  (see Fig. 1) to and round a pulley  $e^2$  to which its ends are firmly secured and which is mounted on an arbor to which a revolving motion can be imparted in either direction by hand or by a suitable gear connection with a suitable motor such as a steam engine situated in a scow A. On the downwardly projecting arm  $d^6$  of the frame D is mounted a grooved roller  $d^7$  which engages a rim  $d^8$  secured in the body of the scow A so that by the action of said roller the frame D is steadied and retained in an upright position. The upper end of the arbor E has its bearings in a standard E' and it extends through this standard and engages

the arm  $d^4$  of the frame D, so as to form additional means for steadying said frame D.

The shaft  $c'$  of the elevator C has its bearings in two bars  $c^2$  which swing on the shaft  $c$  and from the shaft  $c'$  extends a rope or chain  $c^3$  over a roller  $d^3$  mounted in the arm  $d^4$  which extends from the frame D. From the roller  $d^3$  said chain  $c^3$  extends over a guide roller  $d^5$  to and round a windlass F so that by turning this windlass in one direction, the shaft  $c'$  which carries the bottom end of the elevator C, is raised and by turning the windlass in the opposite direction said shaft  $c'$  is lowered. The windlass F may be turned by hand or by any other suitable power. The shaft E is geared by means of a horizontal shaft G with a shaft H which is also mounted in the frame D and is geared with the arbor  $c$  of the elevator C by means of bevel-wheels  $h$  so that the elevator C can be swung round with the frame D or that the outer end of said elevator can be raised or lowered without throwing the same out of gear with the shaft E. This shaft is geared with a vertical arbor I to which motion is imparted by a steam engine or other motor situated in the scow A and which serves to impart motion to the elevator. On each side of the scow is secured a frame J and in the lower end of each of these frames is mounted a horizontal arbors  $j$  on which swings a frame K, in the outer end of which is mounted a crank shaft  $k$  which carries a series of retaining and propelling feet  $k'$ . On said crank shaft  $k$  is mounted a pulley  $k^2$  which connects by a rope or chain  $j'$  with a pulley  $j^2$  mounted on the arbor  $j$  so that when a revolving motion is imparted to the arbor  $j$ , the feet  $k'$  which bear upon the ground, serve to propel the scow A and when the arbor  $j$  is at rest, the feet  $k'$  prevent the scow from moving backward. The frames K can be raised and lowered by means of ropes or chains  $k^3$  each of which extends to a windlass  $k^4$  mounted on the deck of the scow. The feet  $k'$  may be connected to the crank shafts  $k$  in such a manner that each foot can yield if it strikes a rock or boulder.

Each of the frames J is suspended from a bolt or stud 15 (Figs. 2, 4, 5 and 6) and it swings between guides 16, being exposed to



the action of springs 17 which have a tendency to retain the frame in a vertical position. In the frame is mounted a vertical arbor 18 the lower bifurcated end of which forms the bearings for the shaft or arbor *j*. The arbor *j* of each of the frames *J* is geared with a vertical arbor *j*<sup>3</sup> to which motion can be imparted by hand or any other suitable power.

The compartment *B* which receives the dirt discharged from the elevator *C* connects by means of a pipe *l* with a suitable apparatus for drawing the dirt out of the compartment *B* by suction and then forcing the same out to the dumping ground. The apparatus which can be used for this purpose and which is illustrated in the drawings consists of a drum *L* from the bottom part of which extends in one direction the suction pipe *l* and in another direction the discharge pipe *l'*. In Fig. 1 I have shown three such discharge pipes which can be brought into use as occasion may demand. A section of these parts is shown in Fig. 3 and by inspecting this figure it will be seen that the pipes *l l'* are provided with check valves 10, 11, respectively, which work automatically, that is to say, when the atmosphere in the drum *L* is rarefied so as to produce suction, the check valve 10 in the pipe *l* is open and the check valve 11 in the pipe *l'* is closed and if the pressure in the interior of the drum *L* is increased above the atmospheric pressure, the check valve 10 closes automatically by its own gravity and the check valve 11 is opened. I have also provided additional valves 12, 13 for opening and closing the pipes *l l'* in case the check valves 10, 11, or one of them should become choked. When this takes place, the check valves 10, 11 can be actuated by means of wheels which are mounted on their spindles, see Fig. 3, so that either of these valves can be held open or closed as may be desired. The valves 12, 13, can be raised and depressed by any suitable means, but I prefer to use steam power and in order to effect this purpose a piston 14 is secured to the stem of each of said valves. These pistons work in cylinders 15 secured to the valve chambers 16 and each of said cylinders is provided with two pipes 17 and 18 which are connected to a common steam supply pipe 19. Each of the pipes 17 and 18 is provided with a valve 20, 21, respectively, and these valves are connected to a rod 22 so that when this rod is depressed, the valve 21 is opened and the valve 20 is closed and vice versa. When the valve 21 is opened, the piston 14 is raised and the valve 12 or 13 connected to this piston is opened and if the valve 20 is opened the piston 14 is depressed and the valve 12 or 13

connected to the piston is closed. The steam pipe 19 connects with the steam space of a boiler *M* and from this steam space extends a pipe 20' into the top part of the drum *L*. From the top part of this drum extends a pipe 21' which connects with a water pump (not shown). The pipes 20' and 21' are provided with valves 22', 23, respectively which can be opened and closed by any suitable means. At the beginning of the operation the drum *L* is filled with steam. Then the valve 22' is closed and the valve 23 is opened and by injecting cold water into the drum the steam is condensed, a partial vacuum is produced and the dirt contained in the compartment *B* is drawn by suction into the drum *L*. When this has been accomplished, the valve 23 is closed and the valve 22' is opened so that the drum *L* is charged with live steam from the boiler and by the pressure of this steam the matter previously sucked into the drum is forced out through the discharge pipe *l'*. This discharge pipe leads to the dumping ground as indicated in Fig. 2.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with the scow *A* and with the vertical arbor *E* mounted in said scow of the frame *D* engaging said arbor at top and bottom, the guide roller *d*, the grooved roller *d*<sup>7</sup>, the rim *d*<sup>8</sup>, the rope or chain *e*, the shaft *c* mounted in said frame and the elevator *C* supported by said shaft, substantially as described.

2. The combination with the scow *A* and with the vertical arbor *E* mounted in said scow of the frame *D* engaging said arbor at top and bottom, the guide roller *d*, the grooved roller *d*<sup>7</sup>, the rim *d*<sup>8</sup>, the rope or chain *e*, the shaft *c* mounted in said frame, the elevator *C* supported by said shaft, the arm *d*<sup>4</sup> extending from the frame and the rope or chain *c*<sup>3</sup> extending from the outer end of the elevator over the guide rollers *d*<sup>3</sup> *d*<sup>5</sup>, substantially as described.

3. The combination with a scow *A*, and an elevator *C* mounted thereupon, of frames *J* arranged at opposite sides of the scow, frames *K* pivotally mounted at one end on said side frames and adapted to swing in a vertical plane, retaining and propelling feet *k'* arranged at the free end of the pivoted frames, and means for actuating said feet to propel the scow, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHRISTOPHER GULLMANN.

Witnesses:

WM. C. HAUFF,

E. F. KASTENHUBER.