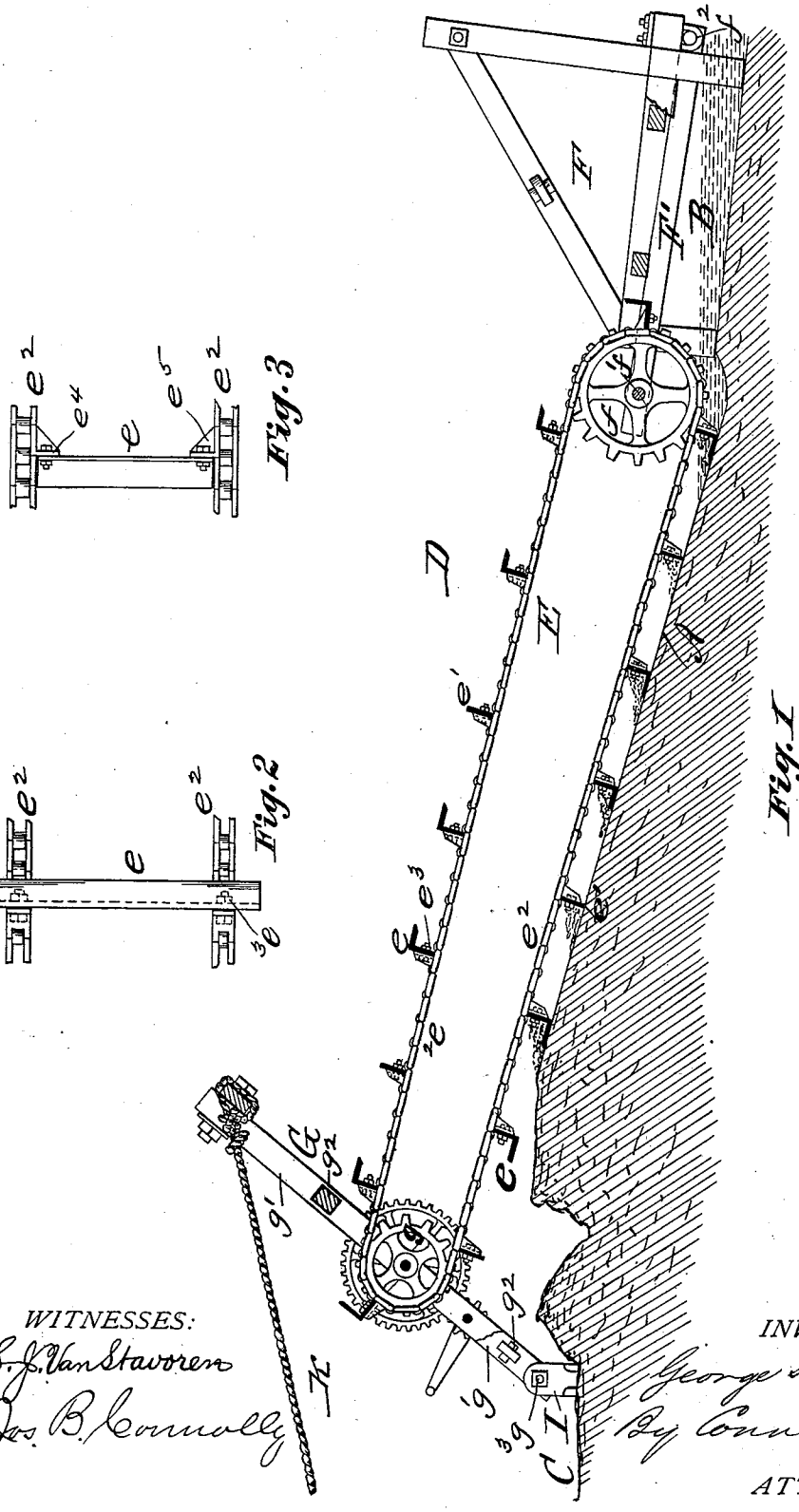
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G. HOWELL.

MEANS FOR RECLAIMING LOW LANDS.

No. 254,322. Patented Feb. 28, 1882.



WITNESSES:
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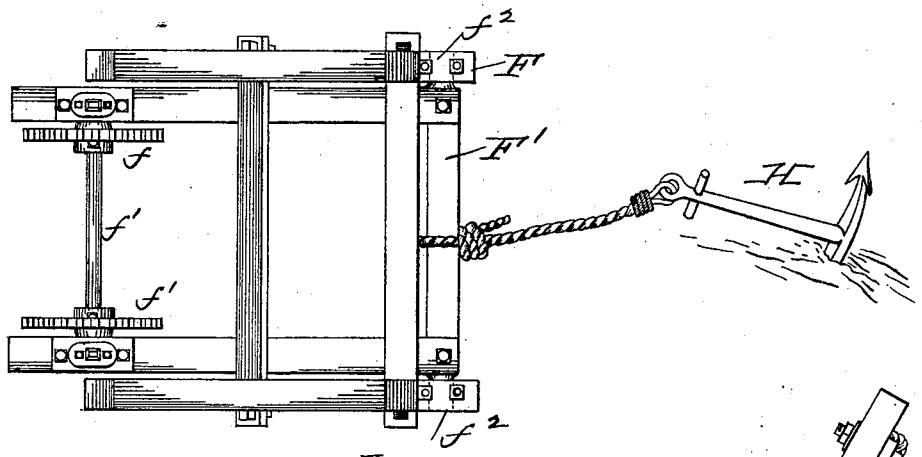


Fig. 4

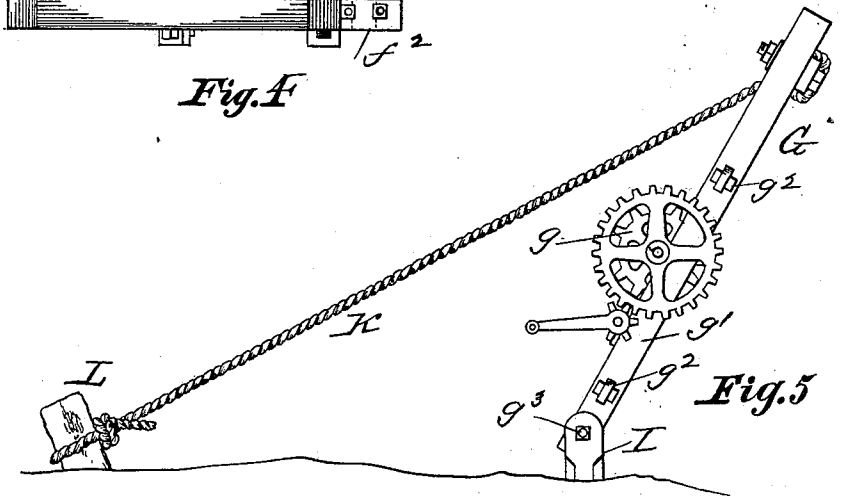
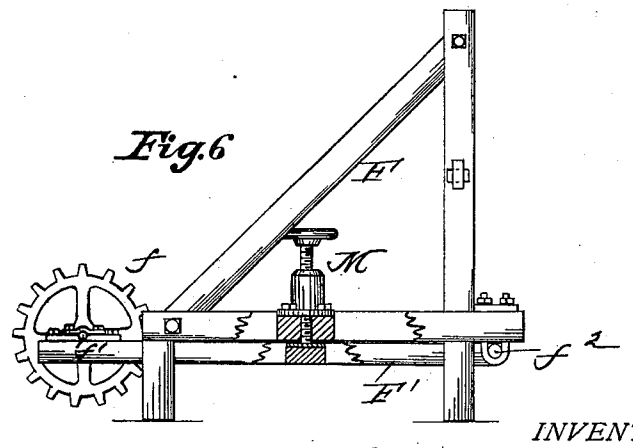


Fig. 5

Fig. 6



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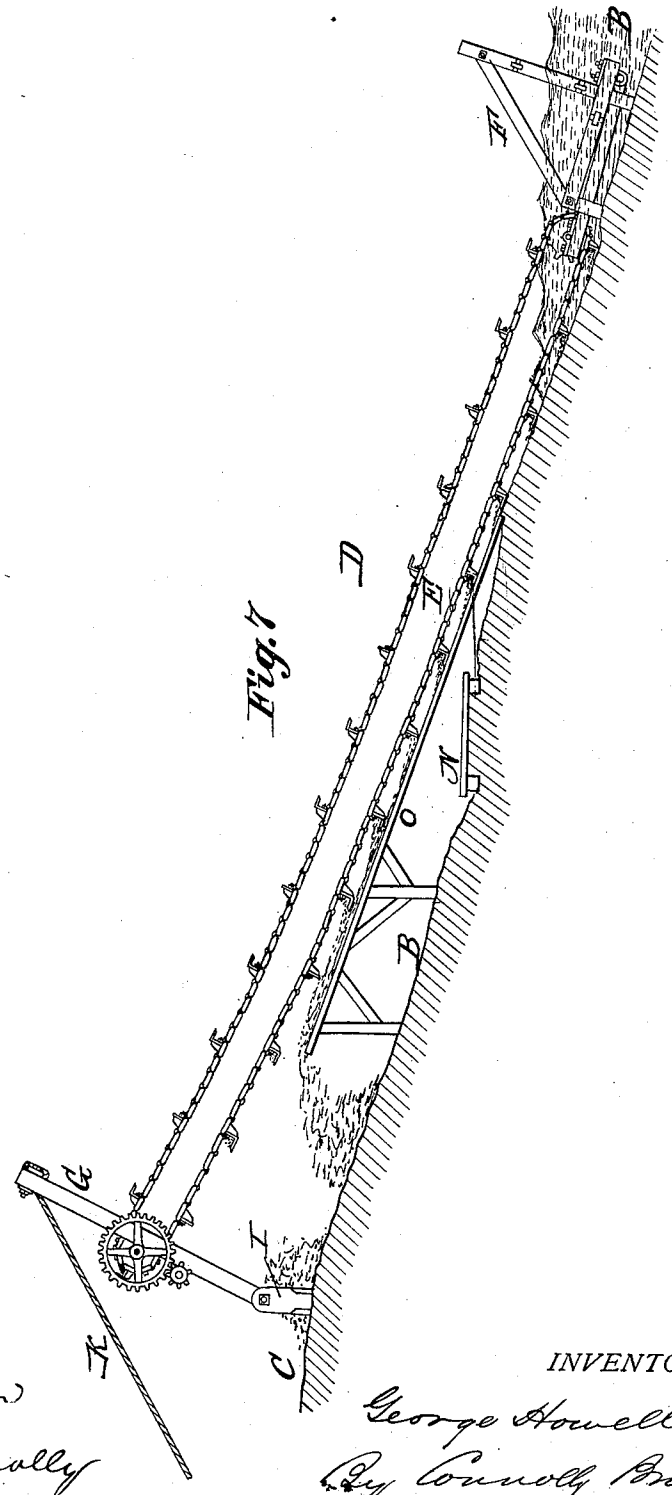


Fig. 1.

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UNITED STATES PATENT OFFICE.

GEORGE HOWELL, OF PHILADELPHIA, PENNSYLVANIA.

MEANS FOR RECLAIMING LOW LANDS.

SPECIFICATION forming part of Letters Patent No. 254,322, dated February 28, 1882.

Application filed October 4, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE HOWELL, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Means for Reclaiming Low Lands; and I do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical longitudinal section of means constituting my invention. Figs. 2 and 3 are detail plans, showing various constructions of drive-chain. Figs. 4 and 5 are respectively a plan and an elevation of apparatus shown in Fig. 1. Fig. 6 is an elevation, partly in section, of frame with screw attachment; and Fig. 7 is an elevation illustrating the mode of conveying the sand up an incline which bridges a board walk or avenue upon the beach.

My invention has relation to a method and means for filling in and reclaiming low or swampy lands adjacent to sandy beaches of the ocean.

My invention consists in the method or process of securing and applying the necessary material (sand or mud) for filling in such lands without injury to the beach where the operation is carried on, and without the necessity of resorting to dumping or other artificial means of obtaining such material.

It consists, further, in the peculiar construction of an excavating appliance for carrying such method into effect.

As is well known, there is lying adjacent to sandy beaches much low and swampy land which, if reclaimed by filling in, would be of great value. Owing to the great expense and labor required by the ordinary method of carting and dumping, such reclamation has hitherto been found impracticable, except to a very limited and almost insignificant extent. Objection, too, has been found to exist to such method on the ground of injury to the beach from which the dump material is taken. I have discovered, however, that by excavating such material from the ocean floor, or below high water, what is taken away will be replaced by natural agencies, so that a constant supply of dump or filling-in material can be secured without any injury to the beach.

My invention accordingly consists in excavating sand or mud from ocean-beaches under water or below high water, such excavations being carried continuously up and over the beach for delivery to and distribution over low lands lying adjacent thereto, as hereinafter specified and claimed.

My invention further consists in the peculiar construction of the excavator, as hereinafter fully set forth.

Referring to the accompanying drawings, A represents a sandy ocean beach, and B the water on said beach.

C represents a portion of a tract of low land lying adjacent thereto which it is desired to reclaim by filling in.

D represents an excavator, extending from the water across or over the beach to the tract C. Said excavator consists of an endless traveling apron or conveyer, E, supported at either end on wheels f g in frames F G, respectively, and provided with scrapers e e'. The support F is secured in or upon the water or on the beach below low water by an anchor, H, or equivalent means, and the shaft f' of the wheels $f f$ has bearings in a frame, F', hinged as shown at f^2, and made vertically adjustable, so as to elevate and to depress, as required, the lower end of the band E.

The frame G consists of two side standards, g' g', with cross-pieces g^2 g^2, secured by bolts g^3 to piles or stakes I driven into the ground. The bolts g^3 form pivots, permitting the degree of inclination of the standards to be varied as required. To regulate and maintain such regulation, a stay, K, is secured to the upper end of the frame G and to a post or stake, L, as shown. The frame G carries the driving-wheels, to which power is applied from any suitable source for moving the conveyer E. Said conveyer consists of side chains, e^2 e^2, to which are connected scrapers e or e', or both. The scrapers e are metal plates, L-shaped in cross-section, of sufficient length to extend beyond or outside of the chains e^2, to the links of which they are secured by bolts e^3. The scrapers e' are flat plates of only sufficient length to extend from one side chain to the other without lapping or crossing either, being secured by bolts e^4 to brackets e^5, fastened to said chains.

The direction of movement of the conveyer is indicated by the arrows, its upper side mov-

ing downwardly and its lower side moving upwardly from the water.

The operation is as follows: The parts being arranged as shown, when the apron moves the scrapers excavate sand or mud from a point below high water, draw or push the same up over the beach, and deposit it on the tract C, over which it is spread by distributing mechanism, substantially the same as that shown in Letters Patent of the United States granted to me, dated November 18, 1879, No. 221,822. As the water rises and falls and the excavations proceed the frame F′ is lowered, and is elevated as required through the medium of the screw M, so as always to cause the scrapers to effect sufficient penetration of the beach to secure a due supply of sand or mud. The material so withdrawn is replaced by natural agency—namely, the tides—so that it is not necessary, on the one hand, to provide a supply for the excavator by dumping from dredges or by other artificial means, while on the other hand, owing to this natural replacement, the beach is in no wise injured.

The material excavated is drawn up, over, and on the beach, as shown in Fig. 1; but in cases where a board walk or other avenue or road is formed on the beach, as shown at N in Fig. 7, a bridge, O, is thrown across said walk or road, forming an incline, over which the excavations are drawn, as shown in Fig. 7.

In previous Letters Patent of the United States granted to me, dated November 18, 1879, No. 221,821, there was shown means for filling in low lands with mud, &c., obtained by dredging and discharged from scows, &c., into a basin. My present invention is distinguishable essentially from that set forth in said patent in this, that, while in the terms of the patent it is necessary to construct a basin and provide an artificial supply, no basin is necessary in the present case, and the supply is provided and replenished by natural agencies.

Under some circumstances the frame F need not be located in or upon the water, but may rest upon the beach above low water. It should, however, in all cases be placed below high water, so that the flow of the tide may replace the excavations with new material.

I am aware that the frames of excavators have been rendered vertically adjustable by means of a screw, and that to fasten such frames securely they have been pinned in place to the ground. My improvements in adjustable frames relate to the peculiar construction of a frame designed to be located in or upon the water, and to be anchored, as a ship is, so that it may rise and fall with the tide. Hence I do not mean my claims to broadly include the vertical adjustment of the excavating-frame, nor the fastening of a support to the ground. I am aware that it has heretofore been proposed to dredge sand for building purposes from below the surface of the water in a river or pond. I am also aware that a dredge or scoop for dredging sand from below the surface of water has been conveyed over the beach on tramways, so as to prevent injury to the beach and facilitate unloading. Such devices and apparatus I do not mean broadly to claim.

What I claim as my invention is as follows:

1. The method herein described for reclaiming low lands lying adjacent to tide-water, consisting in dredging at suitable points along the shore the sand or mud from below high-water mark and beyond the beach, conveying it over the beach to a point above the reach of the tide, and distributing it over the said low lands, the resupply of sand or mud to the excavated places being caused by the action of the tide, substantially as set forth.

2. The combination, with endless apron or conveyer E, of a support, F, carrying a pivoted frame, F′, adjustable by means of a screw, M, substantially as shown and described.

3. The combination, with endless conveyer E, of support F, carrying-wheels *f*, and anchor H, substantially as shown and described.

4. The combination, with endless band or conveyer E, of an anchored support F, carrying a vertically-adjustable frame, F′, and pivoted land-support or frame G, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of October, 1881.

GEORGE HOWELL.

Witnesses:

GEORGE HOUSE,

S. J. VAN STAVOREN.