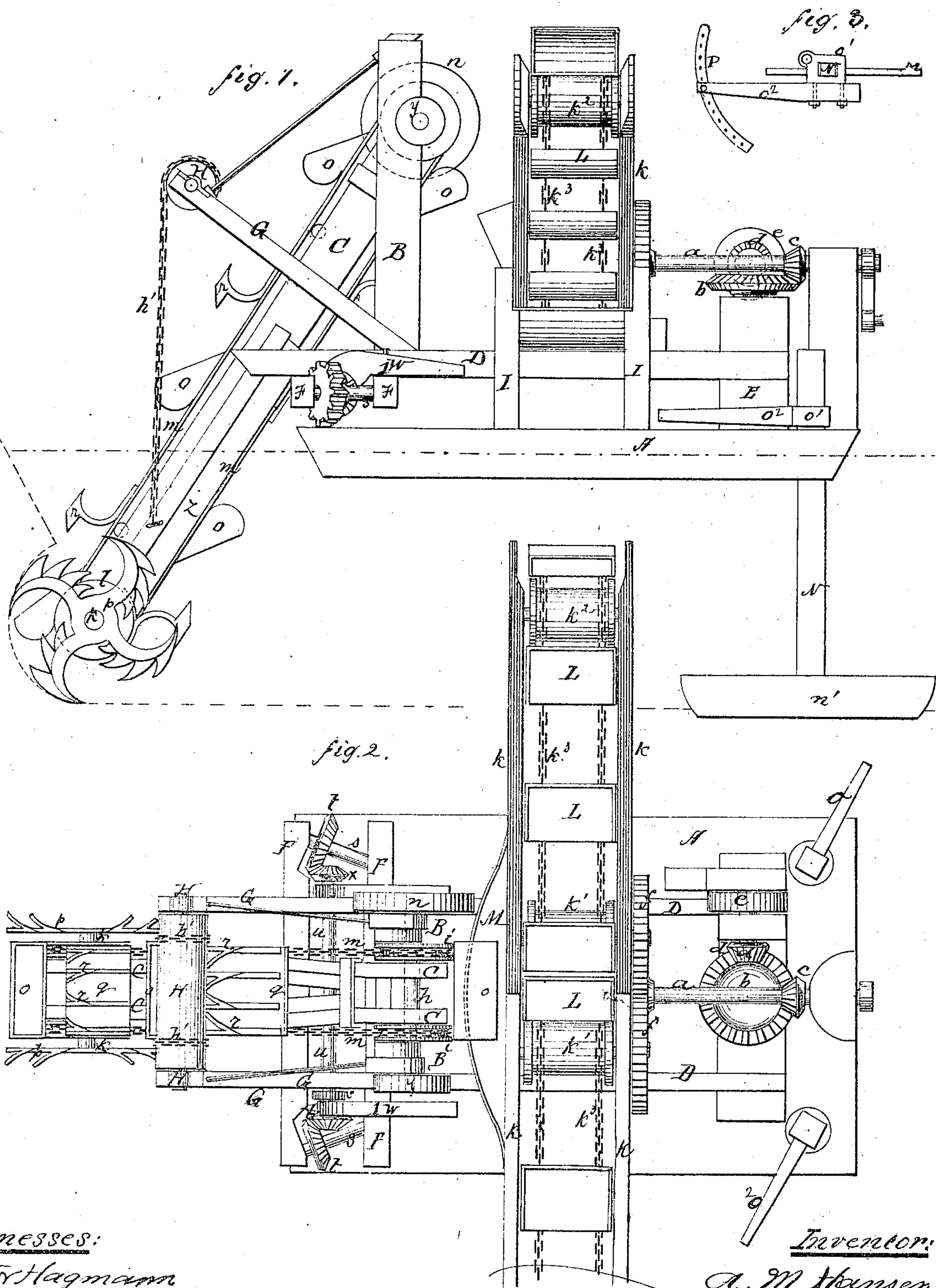


103740

Dredge.

PATENTED MAY 31 1870



Witnesses:

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Inventor:

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per K. M. H.

Attorneys

Andrew M. Hansen.
Improved Excavator.

103740

Fig 4.

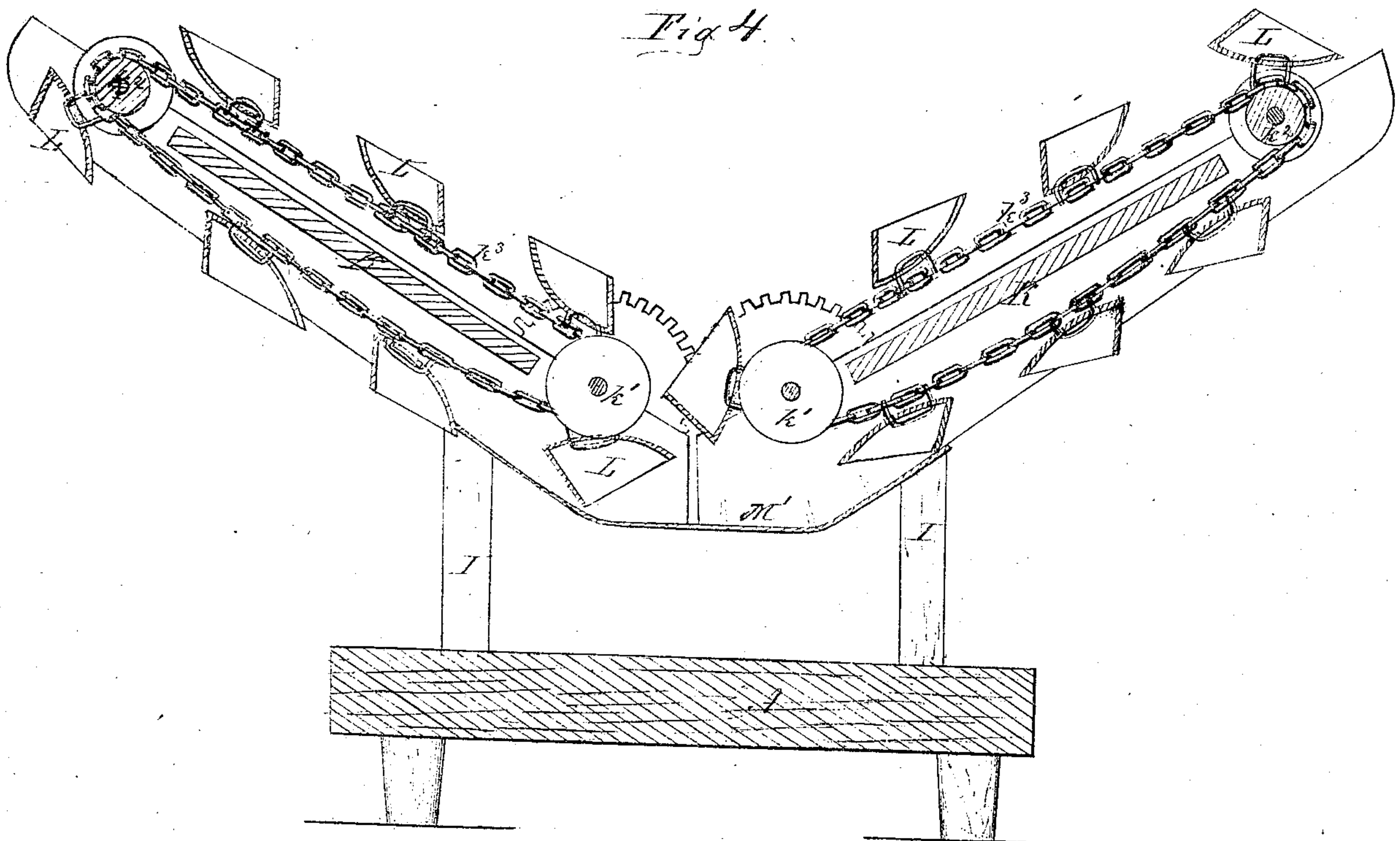
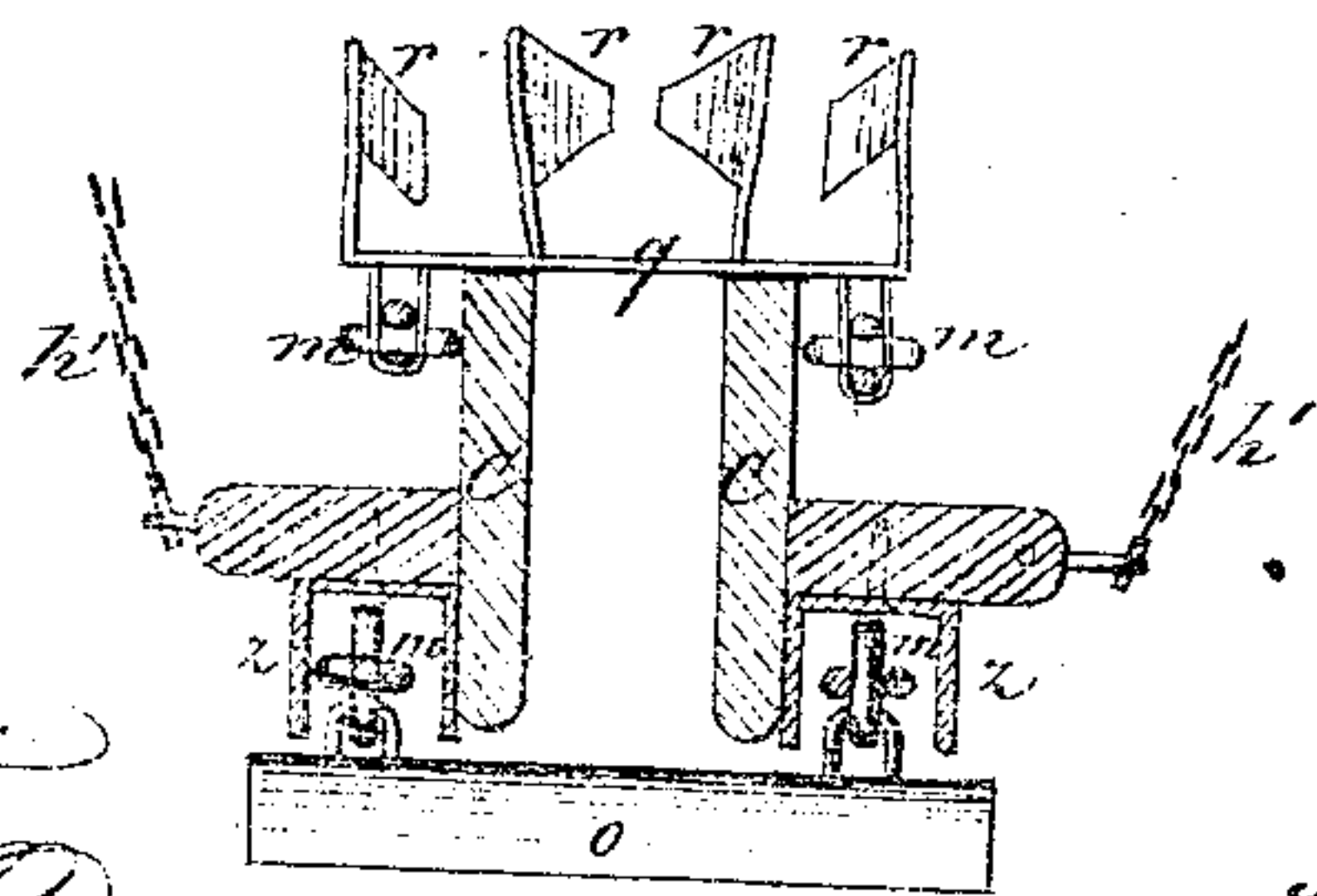


Fig 5.



Witnesses.
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United States Patent Office.

ANDREW M. HANSEN, OF STOCKTON, CALIFORNIA.

Letters Patent No. 103,740, dated May 31, 1870.

IMPROVEMENT IN EXCAVATING-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ANDREW M. HANSEN, of Stockton, in the county of San Joaquin and State of California, have invented a new and improved Excavator; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing forming a part of this specification, and in which—

Figure 1 is a side elevation;

Figure 2 is a plan view; and

Figure 3 is a plan of the sliding anchor-post.

Figure 4 is a sectional elevation through the frames K; and

Figure 5 is a transverse section through frame C.

This invention relates more especially to an excavator intended to be drawn over the surface of the earth, for the purpose of excavating canals and forming embankments on one or both sides.

The invention consists in the combination of two series of buckets, moving in opposite directions for the purpose of discharging the dirt brought up from the excavation to each side of the platform, so as to form embankments when the lower drums, over which the buckets move, are placed so near each other that each bucket has to pass through the same space, and when the buckets of the two series alternately pass through such space so that each bucket comes between two buckets of the opposite series, the object of the arrangement being to leave the least possible amount of mud between the two lower drums, and to enable each bucket to assist in the filling of the next succeeding one, and to insure the equal distribution of mud to each side of the canal.

The invention also consists in an anchor-post for preventing lateral motion of the excavator.

The invention also consists in shields affixed to the lower side of the inclined frame-work that bears the elevator chains, and which shields extend from the lower chain-wheels to a point above the platform of the machine, for the purpose of protecting the chains.

In the drawing—

A is the excavator platform.

a, a shaft near one end, driven by steam or other power.

b, a horizontal bevel-gear, driven by a bevel-pinion, c, on the shaft a.

d, a bevel-pinion, driven by the gear b.

e, a band-wheel on the same shaft with the gear d.

f f, vertical spur-gears, gearing with a pinion on the shaft a.

B, a vertical frame-work near the front end of the platform A.

h, a horizontal shaft, placed transversely of the frame-work B, near its top.

C, an inclined frame-work, hung, at its upper end, to the shaft h.

i i, chain-wheels on the shaft h.

k, a horizontal shaft, placed transversely of the frame-work C, at its lower end.

l l, chain-wheels on the shaft k.

m m, chains connecting the wheels i and shaft k.

n, a wheel on the shaft h, connected by a band with the wheel e, and communicating the motion of the driving-shaft a to the endless chains m.

p p, cutting-plates on the ends of the shaft k, the cutters on which are arranged so as to throw the dirt inward.

q, plates attached to the chains m.

r, cutting-points, attached to the plates q and also arranged so as to throw dirt inward.

o, buckets attached to the chains m between the plates q, so as to receive the earth loosened and thrown inward by the cutters.

D, a horizontal frame-work, on which the frame-work B rests.

E, a block pivoted to the platform A and supporting one extremity of the frame D, and also supporting the bevel-gear b.

F, a cross-frame, supporting the opposite extremity of the frame-work D.

s s, shafts sustaining the cross-frame F and bearing spur-wheel t, which run on the platform A.

u, a horizontal shaft, mounted lengthwise of the cross-frame F, provided with a lever, W, having its fulcrum at 1, and furnished with bevel-pinions x x at its ends, either of which, by means of the lever W, may be made to engage with its adjacent wheel t.

v is a wheel on the shaft u, which is to be connected by a band with a wheel, y, on the shaft h, so that the motion of the latter may be transmitted to the shaft u, and by the latter to either of the wheels t, in order that the cross-frame F may be moved in either direction, according as it is desired to move the cutting apparatus to one side or the other.

z are plates affixed to the under side of the frame C, the upper ends of which are placed as high as the frame D or higher, and which extend to the lower chain-wheel, for the purpose of protecting the chains m from dirt falling from above when undermined by the digging-plows, and from drift-wood, ice, &c., floating in the canal.

G are inclined posts, attached, at their lower extremities, to the frame D, connected by ties with the uprights B, and bearing a roller, H, from which chains k lead downward to the frame-work C, in order that, by turning the roller H in the proper direction, the frame C may be raised or lowered.

I I are standards springing from the platform A.

K K are frames inclined in opposite directions, and supported in such standards.

$k^1 k^1$ are chain-wheels mounted on transverse shafts within the side plates of the frames K, and at the lower adjacent ends of the same, and placed at a distance apart but little greater than is sufficient for the passage of the buckets L one at a time.

k^2 are similar chain-wheels, mounted at the upper ends of the frames K.

k^3 are the chains which connect the wheels k^1 and k^2 .

L are buckets on the chains k^3 .

M is an apron on the side of the frames K, next the frame C, stretching to each side of the point of junction of the frames K, and intended to receive the mud brought up and let fall by the buckets o, and to deposit the same in the receiver M', placed beneath the chain-wheels k^1 , from which it is conveyed to the sides of the canal and deposited, forming embankments, the buckets L of each series being so placed with relation to each other as to alternately move by each other in opposite directions from the apron M, or, in other words, when one bucket has come up to the apron, received its load, and moved toward the right bank of the canal, it is immediately followed by another moving toward the left bank of the canal, while the next one moves toward the right bank, and so on, by which arrangement each bucket is made to come between two buckets of the opposite series, so as to draw mud toward the next one following, and thus assist in filling the same, the buckets being provided with covers by which they may be closed, so as to receive no mud, when, for any reason, it is desired to deposit all the mud at one side.

N is a bar passing vertically through the platform A.

n' is a metal blade on the lower end of the bar N.

O² is a lever, having, at one end, a socket, o¹, through which the bar N passes loosely, so that it may rise and fall with tide-water.

P is a perforated bar that may be affixed to the platform A, and to which the lever O may be secured by a pin entering either of the perforations.

The blade n' , sinking in the soil at the bottom of the excavation, serves to hold the dredging apparatus against lateral pressure, and thus render unnecessary the use of ropes and a pole on the platform for a similar purpose.

The cutting-plates and points excavate by undermining, as shown in fig. 1, the superincumbent mass falling after a sufficient excavation has been made by the cutters. Thus much labor is saved, by making the earth remove itself.

Having thus described my invention,

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

1. The buckets L, arranged in two series, moving in opposite directions, and in such relation to each other that the buckets of each series pass through the same space between the two lower wheels $k^1 k^1$, and each bucket comes between two buckets of the opposite series, substantially as and for the purpose described.

2. The sliding bar N, combined with the platform A, and provided with the blade n' , in the manner and for the purpose specified.

3. The shields z, attached beneath the frame C and on either or both sides of the chains m, in the manner and for the purpose specified.

A. M. HANSEN.

Witnesses:

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D. OURAND.