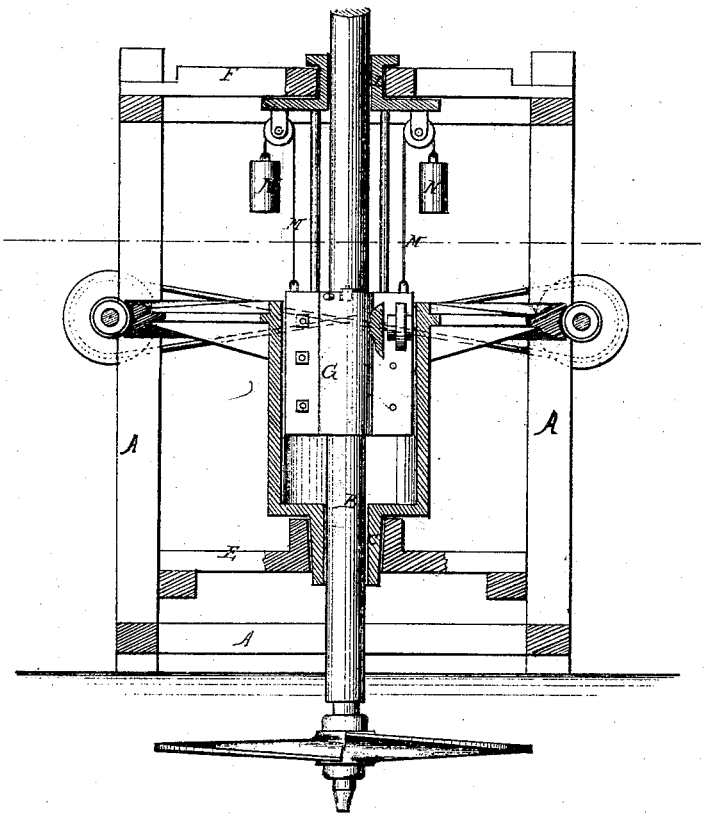
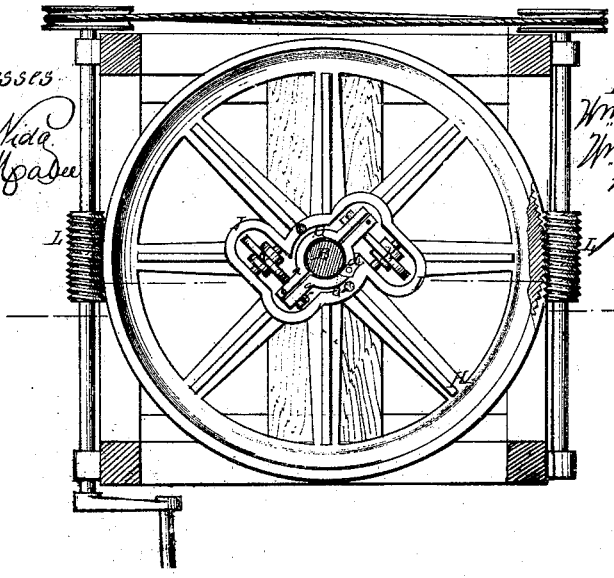
Smith & Reuschel,

File Driver.

No. 111,092. Patented Jan. 17, 1871.





Witnesses
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United States Patent Office.

WILLIAM SOOY SMITH AND WILLIAM REUSCHEL, OF CHICAGO, ILLINOIS; SAID REUSCHEL ASSIGNS HIS RIGHT TO SAID SMITH.

Letters Patent No. 111,092, dated January 17, 1871.

IMPROVEMENT IN MACHINES FOR SINKING SCREW-PILES.

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

To all whom it may concern:

Be it known that we, WILLIAM SOOY SMITH and WILLIAM REUSCHEL, of Chicago, in the county of Cook and State of Illinois, have invented a new and Improved Machine for Sinking Screw-Piles; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in machines for turning screw-piles for sinking them into the earth, and consists in an arrangement, with the hub of the wheel or other device used for turning the shaft of the pile to screw it down, of friction-rollers acting against a clamp made fast to the shaft to impart the rotary motion, and to turn on their axes by the downward motion of the pile, in a manner to avoid the great friction which exists between the pile and the part which imparts the rotary motion when the one has to slide on the other.

The invention also comprises an improved mode of attaching the clamp on which the turning force is delivered.

Figure 1 represents a sectional elevation of my improved machine, and

Figure 2 represents a horizontal section of the same.

Similar letters of reference indicate corresponding parts.

A represents a frame, which may be erected on a scow, float, or other support, according to the nature of the work, whether on land or water, said frame being for holding the shaft of the pile in an upright position; also for supporting the operating parts.

B is the shaft of the screw-pile, which rises up through the bearings C and D, which are suitably supported in the cross-bars E F.

G is the clamp for attaching to the pile-shaft for imparting the rotary motion to it.

The said clamp consists of two strong metal plates *a*, with grooves for the reception of the shaft between them, which plates are clamped against the shaft by bolts *b*, so as to hold it by friction; but for more permanently holding it we propose to apply holding-pawls D to the said clamp, with sharp ends, which will engage the surface of the shaft and prevent the clamp from slipping, and, as a further means of insuring the holding of these pawls, set-screws *e* may be arranged, as shown, to screw against the pawls at the points, and force them into the shaft. As many of them may be used as found best.

H is the wheel for turning the clamp. The hub is made broad and hollow, so that the clamp may work up and down through it freely, as shown, and it is provided with the hollow vertical ribs I, one on each side, as shown, for the application of the friction-wheels K in such a way that, as the wheel is turned, these wheels will come in contact with the clamp and be the means of communicating the power applied to the wheel, to the clamp and the shaft, which, being turned thereby and screwed into the ground, will move downward, together with the clamp, along the wheels with but little friction.

The wheel H is provided with worms L, or it may be any other suitable means for turning it, or, instead of the wheel, a sweep or long lever may be employed, said sweep having a hub arranged as here shown or in any equivalent way, and provided with the friction-wheels.

The hub of this wheel terminates at the bottom in the bearing C for the shaft, and rests on and extends into the cross-bar E, as shown, but it may be arranged in any equivalent way for the support of wheel H.

The clamp is made in suitable length to correspond with the depth of the hub, and is intended to be raised on the shaft from time to time as it is carried down by it, being loosened therefrom previous to rising, and to facilitate the raising the cords M, with counter-weights N, are applied to it, as shown, the said cords being arranged on rollers suspended from the frame above so as to rotate with the shaft.

Heretofore it has been customary to plane key-grooves in the shafts of these screw-piles, and employ wheels or levers with splines or keys in the hubs through which the shafts were passed for imparting the rotary motion to them, but the great friction of the keys and hubs on the shafts, due to the enormous force required to turn the screw, is a serious obstacle to the successful sinking of the piles, being sometimes so great that it overcomes the draft of the screws in soft ground, and they cannot thereby be sunk, and, besides this, the labor and cost of planing the grooves are material objections, all of which are avoided by our improved plan.

Having thus described our invention,

We claim as new and desire to secure by Letters Patent—

1. The combination, with the hub of the wheel or other turning device, of the friction-rollers K and a clamp, G, when arranged for action on the shafts of screw-piles, substantially as specified.

2. The combination, with the clamp G, of the weighted cords M, substantially as specified.

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