

(No Model.)

2 Sheets—Sheet 1.

S. H. TARBELL & G. SOUTHER.

PILE DRIVER.

No. 258,954.

Patented June 6, 1882.

Fig. 1.

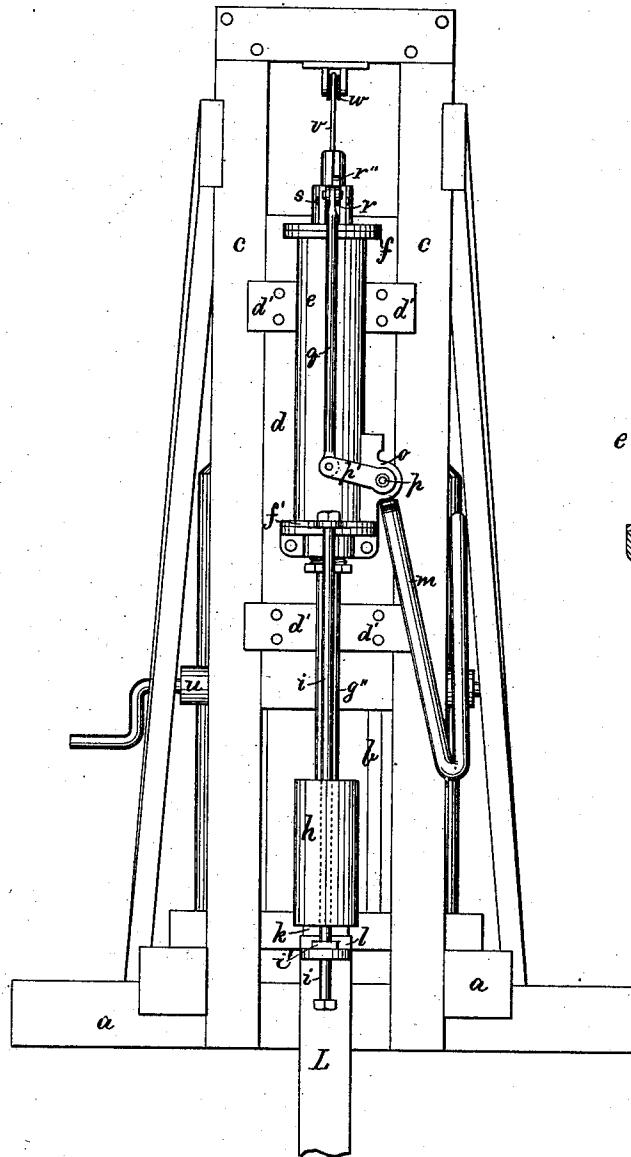
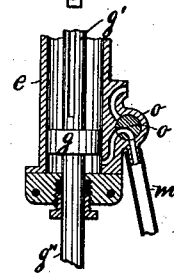


Fig. 2.



Witnesses.

Henry Chadbourne.
Wm. Hermans.

Inventors.

Stephen H. Tarbell
and
George Southern.
by Alvan Andrieu their atty

(No Model.)

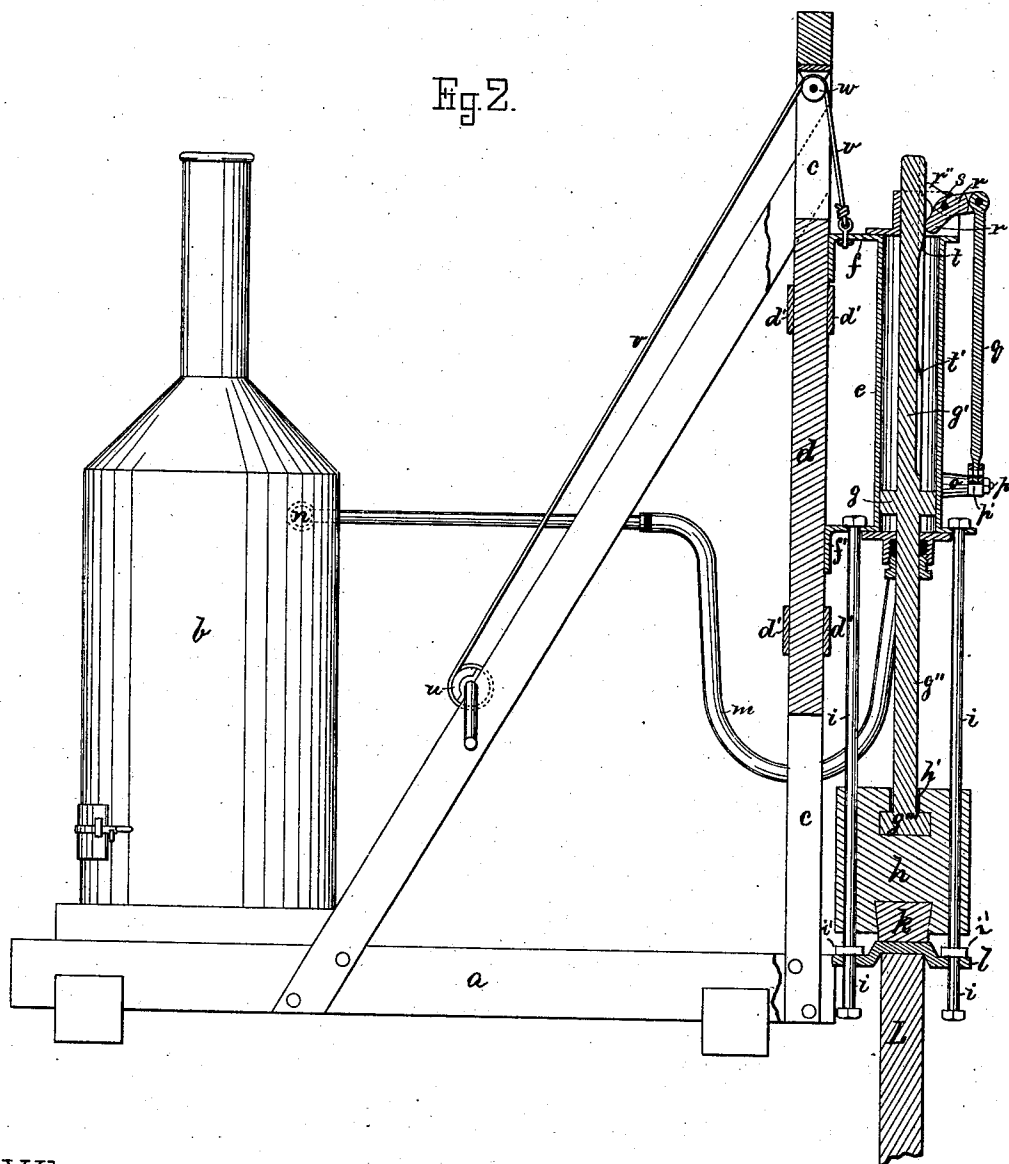
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UNITED STATES PATENT OFFICE.

STEPHEN H. TARBELL AND GEORGE SOUTHER, OF BOSTON, MASS.

PILE-DRIVER.

SPECIFICATION forming part of Letters Patent No. 258,954, dated June 6, 1882.

Application filed December 31, 1880. Renewed January 9, 1882. (No model.)

To all whom it may concern:

Be it known that we, STEPHEN H. TARBELL and GEORGE SOUTHER, both citizens of the United States, both residing at Boston, in the county of Suffolk and State of Massachusetts, have jointly invented certain new and useful Improvements in Steam Pile-Drivers; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in steam pile-drivers, and is especially designed for driving sheets or planks by steam-power, and to accomplish this purpose in a more rapid and labor-saving manner than formerly.

The invention is mainly composed of a steam-motor with its cylinder and piston-rod, the latter having a hammer secured to its lower end, which hammer in its fall strikes on a shoe resting on the sheet or pile or plank, said shoe and cylinder being connected in such a manner that the said steam-motor and its piston-rod and hammer, as well as the shoe on the top of the pile or plank or sheet, all descend and follow the latter in the ratio in which such pile, plank, or sheet is being driven, as will be more fully described, reference being had to the accompanying drawings, on which—

Figure 1 represents an end elevation, and Fig. 2 represents a longitudinal section. Fig. 3 represents a cross-section of the valve or cut-off at the lower end of the steam-cylinder.

a is a suitable platform for the support of the steam-boiler *b* and the upright frame *c c*. Between said frame *c c* is the slide *d*, free to move up and down, and to prevent the latter from moving out from the frame *c c* it is provided with suitable guide-pieces, *d' d'*, as shown.

e is a single-acting steam-cylinder, having brackets *f f'* firmly secured to the movable slide *d*.

g is the piston within the cylinder *e*, which piston is preferably made in one piece with the piston-rod *g' g''*, of which *g'* is the upper portion, and *g''* is the lower one, as shown.

g''' is a head in the lower end of the piston-

rod *g''*, which head is also preferably made in one single piece with the piston-rod *g''*, so as to prevent its being detached from said piston-rod during the operation of the machine. The head *g'''* is located in a T-shaped groove, *h'*, in the upper part of the up-and-down movable hammer or weight *h*, the latter being arranged to slide up and down on the guide-rods *i i*, that are secured in their upper ends to the bracket *f'*, as shown.

R is a wooden block, inserted in the under side of the hammer *h* to prevent the latter from striking on the metallic shoe *l*, that rests loosely upon the top of the sheet or pile *L* that is being driven. The said shoe *l* is loosely attached to the lower ends of the vertical guide-rods *i i*, as shown, the latter being provided with collars or projections *i' i'* above the shoe *l*, by means of which the cylinder *e* is supported on the shoe *l* during the upward motion of the piston *g* and its hammer *h*, as well as during the fall of the latter, so that the cylinder *e*, its rods *i i*, and the shoe *l* are supported on the top of the pile that is being driven, and gradually descend in the same ratio.

m is a flexible steam-pipe, leading from the valve *n* on the boiler to the valve-box *o* on the steam-cylinder. Within the valve-box *o* is located a valve or cut-off, *o'*, of which *p* is the valve-spindle, to which the short lever *p'* is attached.

q is a connecting-rod from the lever *p'* to the upper lever, *r*, that is movable on the fulcrum *s*, as shown.

r' r'' are projections from the upper lever, *r*, that are acted upon by the inclines *t t'* on the piston-rod *g'* during the up-and-down motion of the latter, so as to automatically change the position of the valve *o'*, that is attached to the spindle *p*, so as to deliver and cut off the steam from the lower end of the steam-cylinder.

During the operation of the machine the steam is delivered to the lower end of the steam-cylinder, by which the piston *g* is raised, as is also the hammer *h*, that is allowed to fall by its own gravity as soon as the piston *g* reaches its highest altitude, at which point the steam is automatically cut off. In this manner, by alternately raising the hammer by steam-power and allowing it to descend by its own gravity upon the shoe *l*, interposed between it and the

sheet or pile, the latter is rapidly being driven into the desired place. It will thus be seen that the slide *d*, the steam-cylinder *e*, and the hammer *h* descend gradually in the ratio as the sheet or pile is being driven. *u* is a suitable windlass, with a rope, *v*, leading over the pulley *w* to the steam-cylinder *e*, for the purpose of raising the latter to its proper position for driving another sheet, plank, or pile.

10 Having thus fully described the nature, construction, and operation of our invention, we wish to secure by Letters Patent and claim—

In combination with the gradually-descending steam cylinder *e* and its hammer *h*, the shoe *l*, resting loosely on the top of the pile, as and 15 for the purpose set forth and described.

In testimony whereof we have affixed our signatures in presence of two witnesses.

STEPHEN H. TARBELL.
GEORGE SOUTHER.

Witnesses:

ALBAN ANDRÉN,
HENRY CHADBURN.