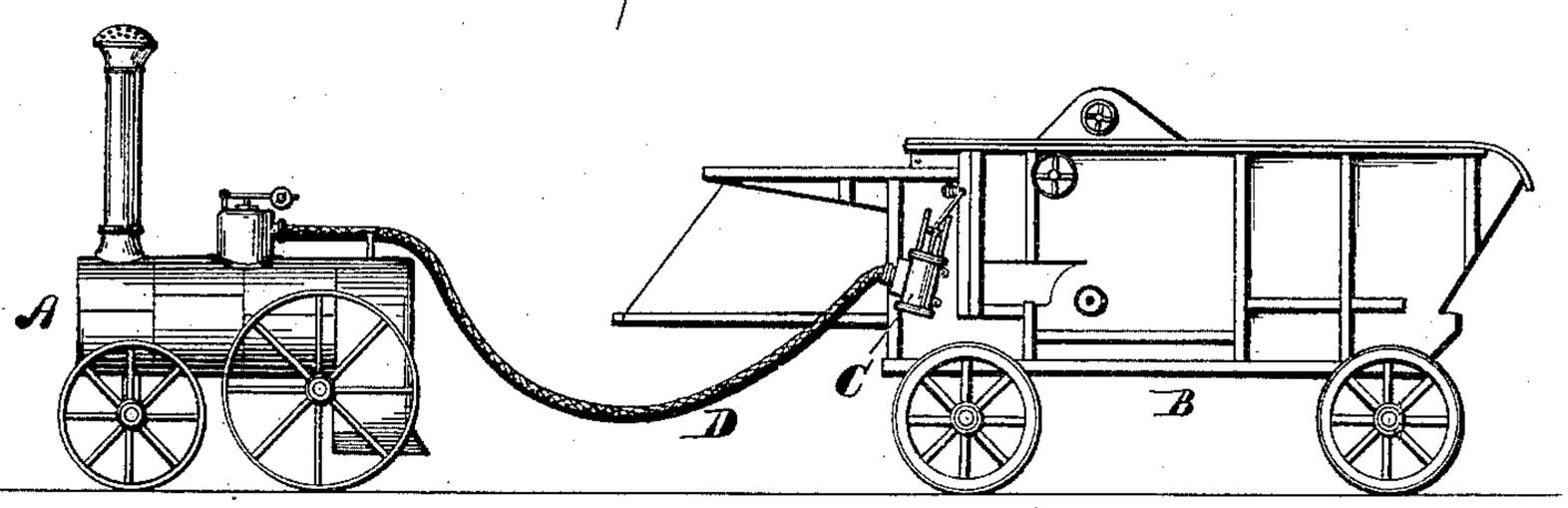
(No Model.)

E. HOWLAND.

COMBINED THRASHER AND STEAM ENGINE.

No. 385,627. Patented July 3, 1888.

Fig. 1.



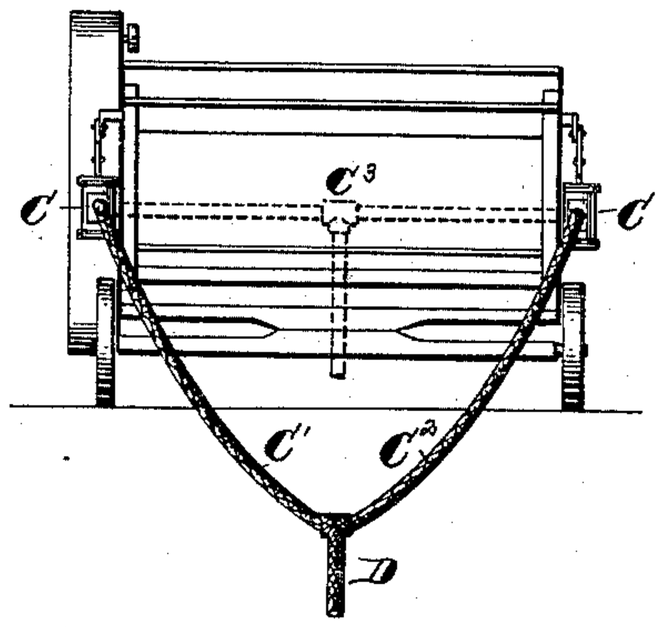


Fig. 2.

WITNESSES.

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EPHRAIM HOWLAND, OF PONTIAC, MICHIGAN.

COMBINED THRASHER AND STEAM-ENGINE.

SPECIFICATION forming part of Letters Patent No. 385,627, dated July 3, 1888.

Application filed December 1, 1887. Serial No. 256,674. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM HOWLAND, a citizen of the United States, residing at Pontiac, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Combined Thrasher and Steam-Engine; and I 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, which form a part of this specification.

My invention consists of the combinations of devices and appliances, hereinafter specified, and more particularly pointed out in the claim.

In the drawings, Figure 1 is a side elevation of a steam-boiler, thrasher, and engine illustrating my invention. Fig. 2 is an end elevation of the thrashing-machine, illustrating an engine attached upon each of its sides.

This invention is designed to overcome many of the difficulties and dangers attending the use of steam thrashers—first, in avoiding the necessity of a connecting-belt between the thrashing-machine and the steam-engine, thereby doing away with the danger to life and limb occasioned thereby; secondly, by dispensing with such a belt-connection to obviate the necessity of an exact location of the boiler with respect to the thrashing-machine; thirdly, in enabling me to locate the steam-boiler at any convenient place near to or remote from the thrashing-machine, and giving it a location, also, with respect to the wind, or with respect to surrounding combustible materials, as to render it no longer a source of danger in the way of starting fires; fourthly, in avoiding the necessity of an expensive engineer at the boiler, bringing this labor within the control of one of the necessary persons employed about the thrashing-machine and necessitating only a fireman at the boiler; fifthly, in avoiding the necessity of any alignment of pulleys; sixthly, by bringing the engine within the immediate control of the feeder or other hand at the thrashing-machine itself, to enable him to instantly stop the machine or to reverse it or operate it at will without compelling him to communicate back to the engineer at the boiler; seventhly, by stripping the boiler of its engine, drive-wheel, drive-shaft, and bed-plate to reduce its weight to such an extent that it may be easily drawn by a team of horses over ordinary roads, whereas by the location of an engine or engines to the thrasher the weight of the latter is not increased beyond the capabilities of an ordinary team.

In carrying out my invention, A represents an ordinary portable steam-boiler.

B represents any thrashing-machine or separator for the purpose of thrashing seeds and grains.

C is a steam-engine affixed as an attachment to the said thrashing-machine and connected by pitman-connection with any one of its driving-shafts.

D is a steam-hose connecting the steam-drum of the boiler with the said engine upon the thrashing-machine.

I would have it understood that I may employ either one or more engines upon the thrashing-machines. I prefer to employ two engines—one at each end of the same shaft and connected therewith at quarters—so as to avoid dead-points in its motion, and also because by the employment of two small engines the weight is uniformly distributed upon both sides of the thrashing-machine. So, also, this arrangement will tend to neutralize inconvenient vibrations that might arise by the use of a single engine upon one side only of the thrashing-machine. Again, by the employment of two such small engines the power can be supplied with a less weight of metal than would be the case if a single engine were alone employed. In case two engines are employed the steam-hose should, as shown in Fig. 2, be forked into two branches, $C' C^2$. It is apparent that by this construction the boiler may be located in any convenient place. There is no necessity of aligning the boiler with the engine. The boiler may be nearer to or farther from the thrashing-machine, so as to conform to existing conditions of the wind as regards danger from sparks. So, also, it is frequently desirable to change the location of the thrasher itself, because of the accumulation of straw, or because of the change of the wind, which would blow the dust upon the employés. All this may be accomplished without any alteration in the position of the steam-boiler and without regard thereto.

I do not limit myself to any particular shaft

upon the thrashing-machine to which the engine or engines are applied; nor do I limit myself to a direct pitman-connection between the piston of the engine and a crank upon the said shaft, for said connection may be through intermediate gearing.

The exhaust from the engine or engines may be at any particular point, or it may, if desired, be conveyed back and serve to produce a forced draft at the boiler.

Instead of employing a forked hose, C' C^2, for leading to the two engines, there might be simply a single steam-conduit connection at a T on the thrashing-machine from the latter, or branches of which pipes might lead direct to each engine, as indicated by dotted lines in Fig. 2 at C^3.

What I claim is—

The combination, with a movable thrashing-machine and two steam-engines, one upon each side of the thrashing-machine and geared with its driving mechanism, of a portable steam-boiler and a flexible steam hose or conduit connecting said boiler and engines, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

EPHRAIM HOWLAND.

Witnesses:
M. B. O'DOGHERTY,
JOHN E. WILES.