A. M. SPRAGUE.

PISTON HEAD.

No. 10,898. Patented May 9, 1854.

Fig. 1.

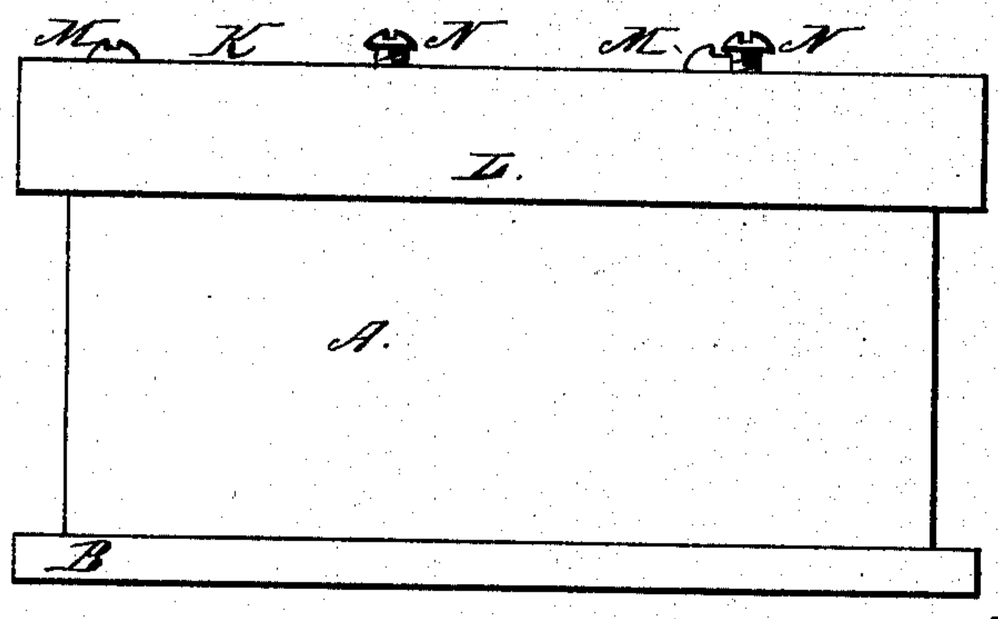


Fig. 2.

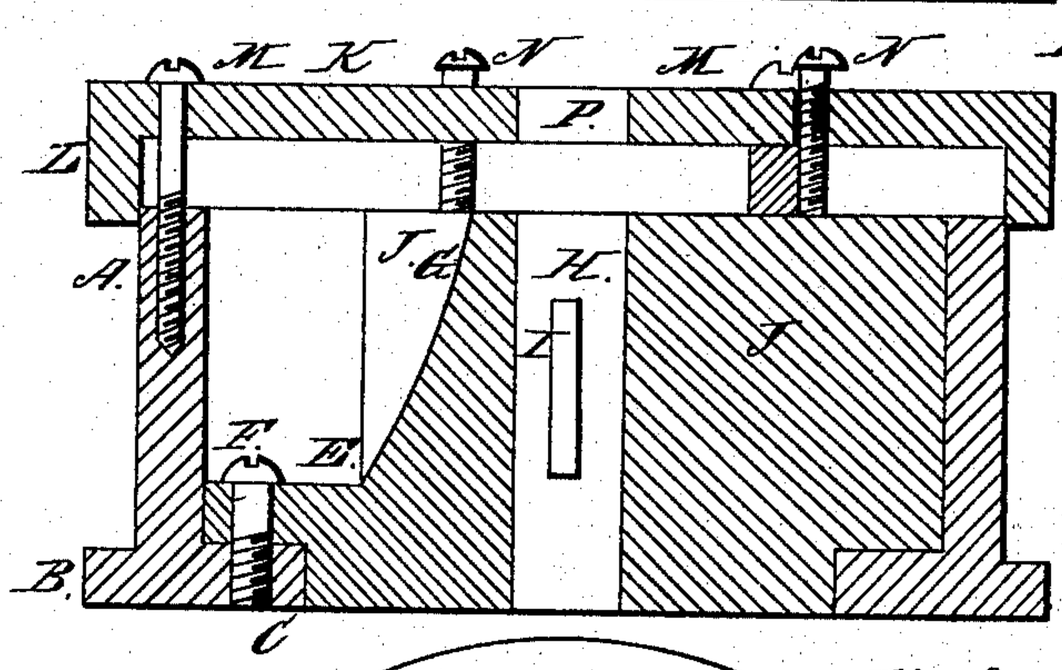
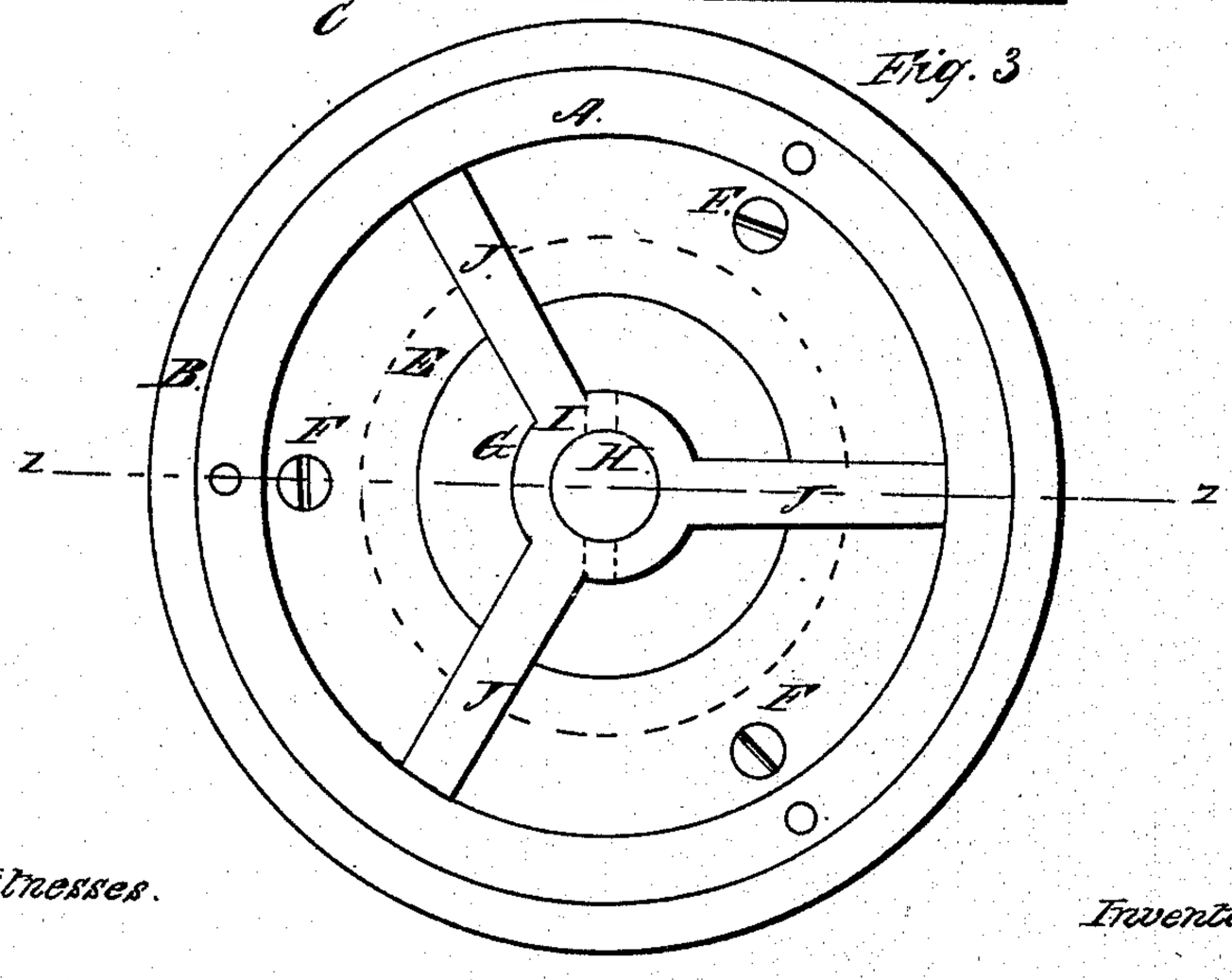


Fig. 3



Witnesses.

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Alexander M. Sprague,

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ALEXANDER M. SPRAGUE, OF MOBILE, ALABAMA.

PISTON FOR STEAM-ENGINES.

Specification of Letters Patent No. 10,898, dated May 9, 1854.

To all whom it may concern:

Be it known that I, ALEXANDER M. SPRAGUE, of Mobile, in the county of Mobile and State of Alabama, have invented a new and useful Improvement in Pistons for Steam-Engines and other Purposes; and I do hereby declare that the same is described and represented in the following specification and drawings.

To enable others skilled in the art to make and use my improvement I will proceed to describe its construction and use, referring to the drawings in which the same letters indicate like parts in each of the figures.

Figure 1, is an elevation of a piston with my improvement. Fig. 2 is a section of Fig. 1, cut through the center on line *z z* of Fig. 3. Fig. 3, is a plan with the follower omitted to show the interior.

In these drawings the barrel or outer portion of the piston is represented at A, and provided with a flange B to retain the packing, both of which should be made to suit the cylinder in which they are to be worked and the kind of packing intended to be used.

The barrel A is provided with a flange C on the inside to which the disk or body E is fitted, and fastened by the screws F F or otherwise. The disk or body E is provided with a hub G, and hole H to which the piston rod is fitted and fastened by a key in the hole I or otherwise; and there may be three or more radial flanges J J extending from the hub G to the barrel A as represented to materially support and strengthen the disk.

The follower or cap K may be made in the form represented or otherwise and provided with a flange L, which is fitted to the barrel A so as to bind and press the packing between the flanges B and L, as the follower or cap is drawn onto the barrel A by the screws M M which pass through it into the barrel A as represented; and the cap may be adjusted as desired by the temper screws N N which are screwed through it against the radial flanges J J; which screws N N also aid in pressing the disk E against the flange C, besides they hold or press the cap K against the screws M M so as to prevent them from working loose and breaking the cylinder head. When the piston is to be used in a vertical cylinder the cap K will require a hole P through it for the piston rod, but in horizontal engines it may be used either with or without the hole as may be preferred.

I contemplate that projections may be cast on the inside of the barrel, and corresponding scores in the edge of the disk, with inclined planes between them so that the disk may be put into the barrel and turned so as to bring the inclined planes under the projection, so as to hold the barrel upon the disk either with or without bolts; or that such other means may be used to fasten the disk or body and barrel together, as may be desirable without departing from the principle or merit of my invention.

I have been induced to make this invention to meet the wants of the steamboats upon the Mississippi, its tributaries and other rivers where engines with horizontal cylinders are used, with pistons packed with a composition of soft metals, as tin, lead, zinc and antimony which packing has been known to last three years, without being recast; and this packing is preferred to all others where muddy or foul water is used. It is usual on these boats to take out the piston so as to stretch a line through and level up the cylinder and other parts of the engine once in six months or oftener; and the above-mentioned packing although the most perfect when in the cylinders is very difficult to get out, when the cylinders are worn larger where the piston works, than at the extreme ends so that the packing is compressed or slugged as it is forced out, as it is usually done by placing a block between the T head of the piston rod and the end of the pitman and applying jackscrews to the floats of the wheel; and after it is so forced out it usually falls to pieces so that it cannot be replaced without being recast; and when recast a great portion of it becomes oxidized and turns to dross and is lost. Besides if the cylinder is much worn the piston cannot be forced out with the packing, but the engineer is obliged to remove the follower and break up the packing with a chisel, and pry it out with a crooked bar which usually takes him a day, and the inside of the cylinder is generally more or less bruised and cut, so as to injure it; and this process lengthens the time the boat is delayed, and requires a great deal of labor besides the expense of new packing; when this is done once in six months or oftener as it is generally done, the loss by the boat's being delayed and the expense of

removing the old packing and supplying the new; forms a pretty large item against the profits of a boat.

To remedy all the disadvantages enumerated and others, I was induced to make the above described piston with a barrel and flange to support the packing fastened to the body or disk upon the piston rod; the barrel being fastened to the disk by bolts or otherwise, so that the disk can be removed whenever it is desirable to level the cylinder with comparatively little labor and in a very short time while the barrel and packing remains in the cylinder, in perfect order ready for use when the other parts are replaced, thereby saving the labor of removing the packing and the cost of new and avoiding the delay above mentioned, and the damage to the inside of the cylinder. Besides the advantages enumerated, each engineer can make new or recast his old packing when he pleases provided he has a ring of wood or metal the same size of the flange upon the follower, by properly adjusting the barrel A in the cylinder by wedges or otherwise, and luting the space between the flange B and the cylinder; then properly adjusting the above mentioned ring in the place of the flange upon the follower and luting it where it joins the cylinder and the barrel. This ring should be perforated and provided with a crooked tube to conduct the melted metals which are to form the packing into the space between the barrel and the cylinder; after the metal has been poured in and cooled, all the luting may be removed; also the ring, and the disk put into the barrel and fastened, and the follower put on and the packing is ready for use.

What I claim as my invention and desire to secure by Letters Patent is,

Making the body of the piston in two parts, substantially as described; so that the hub and disk or body, or center portion of the piston can be removed, with the piston rod in the same direction that the follower or cap is taken off, and replaced without removing the outer portion, or barrel and flange that supports the packing.

ALEXANDER M. SPRAGUE.

Witnesses:

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