2 Sheets—Sheet 1.

M. PARKS.
Guide-Pile.

No. 216,970. Patented July 1, 1879.

Fig 1.

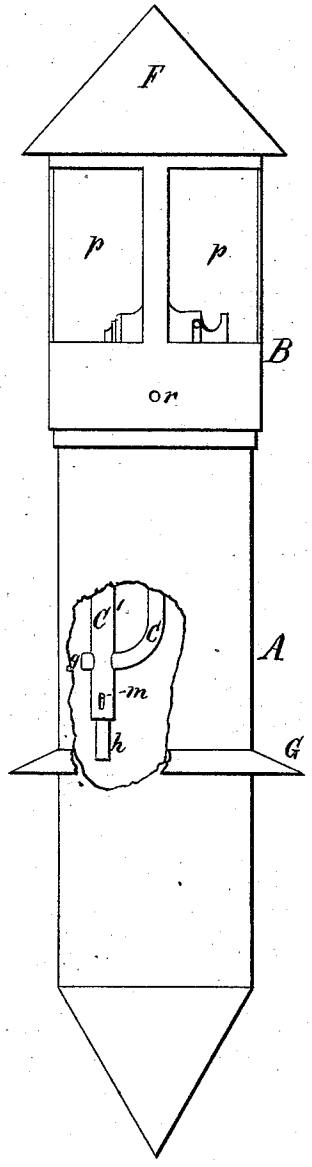
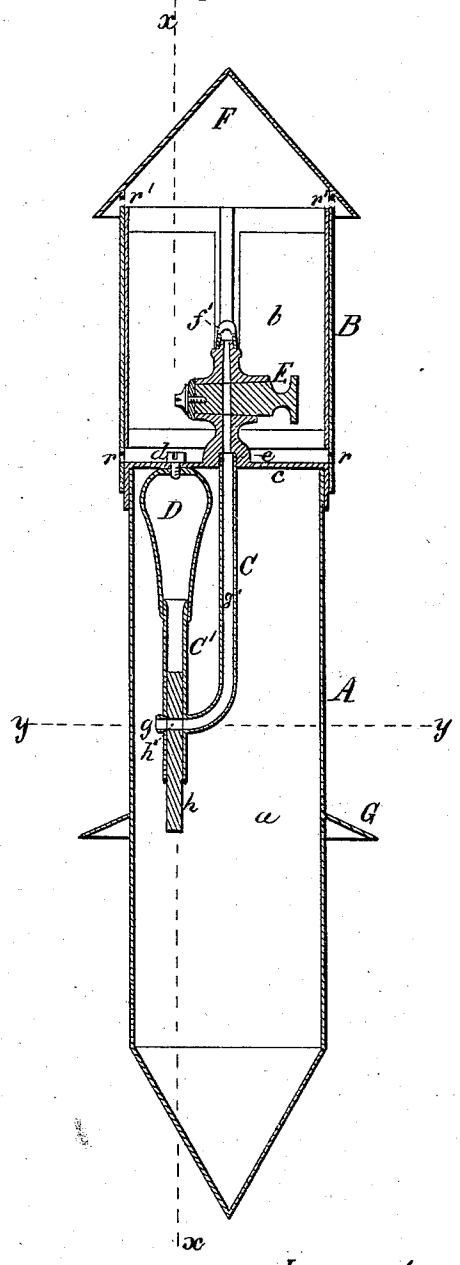


Fig 2.



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2 Sheets—Sheet 2.

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Fig 3.

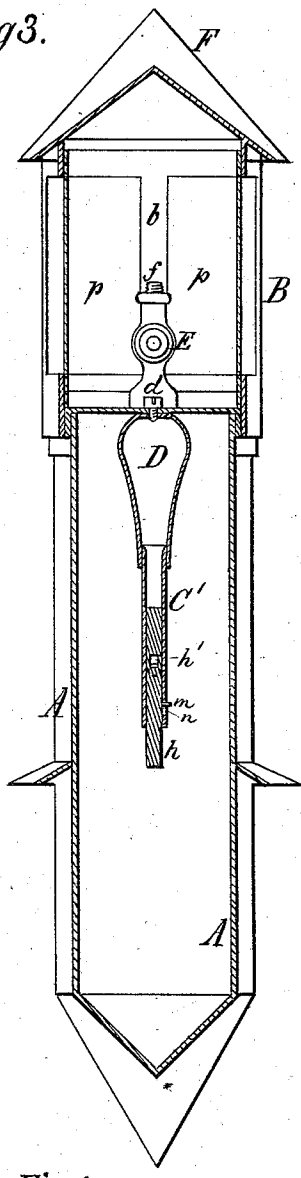


Fig 5.

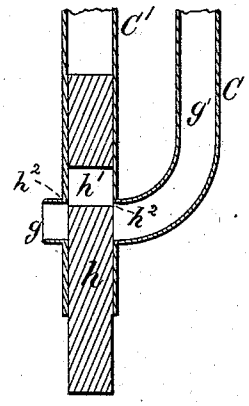


Fig 6.

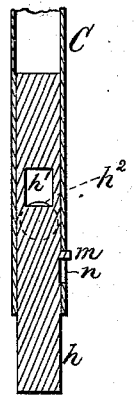
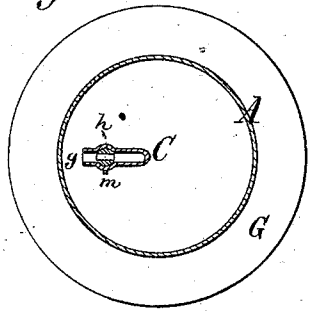


Fig 4.



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UNITED STATES PATENT OFFICE.

MARSHALL PARKS, OF NORFOLK, VIRGINIA.

IMPROVEMENT IN GUIDE-PILES.

Specification forming part of Letters Patent No. **216,970**, dated July 1, 1879; application filed April 30, 1879.

To all whom it may concern:

Be it known that I, MARSHALL PARKS, of the city of Norfolk, in the county of Norfolk and State of Virginia, have invented a new and useful Guide-Pile or Beacon-Pile for Navigable Rivers and other navigable water-ways; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and letters of reference marked thereon, forming a part of this specification, in which—

Figure 1 is a side elevation of my improved guide or beacon pile as it appears when the burner is supplied under the highest pressure of illuminating-gas. Fig. 2 is a vertical central section of the pile as it appears when the burner is supplied under the lowest pressure of the gas in the gas-chamber of the pile. Fig. 3 is a vertical section in the line *x x* of Fig. 2, the parts being in the positions shown in Fig. 1. Fig. 4 is a horizontal section, looking downward, in the line *y y* of Fig. 2. Fig. 5 is an enlarged detailed section, the parts being in the position shown in Figs. 1 and 3; and Fig. 6 is a similar section, but at right angles to the one shown in Fig. 5.

The nature of my invention consists of a hollow metallic pile for navigable waters, forming a gas-chamber for containing compressed illuminating-gas and a gas-burning chamber, said pile being adapted for being partially embedded a portion of its length into the bed or margin of a navigable river or other navigable water-way, and there firmly fixed in position, and having its upper end provided with transparent windows, and its interior with a gas-pipe having a screw end for either receiving a burner or a gas-charging hose, an air-chamber, an automatic gas-supply valve, and a cock for cutting off or letting on the gas as occasion may require.

My beacon-pile not only subserves the office of the spar-buoy and the ordinary wooden pile driven or anchored into the bed of or along the margin of a water-way for guiding the pilot by daylight, but also takes the place of the illuminated buoy and the inland light-house for guiding the pilot at night.

As a substitute for the buoy, it overcomes the great annoyance experienced from the frequent hiding of the light in the troughs of the waves, to which the buoy is subject during heavy storms, as well as the danger of navigation incident to the displacement of the buoy by storm and tide and the obscuration of its light by saline deposits on its windows; and as a substitute for an inland light-house it is very economical in respect to both cost of construction and attendance.

In the accompanying drawings, A and B represent my illuminated guide or beacon pile, made hollow, either of cast, wrought, or malleable metal, and having its lower interior chamber, *a*, gas-tight, and separated from its upper chamber, *b*, by a horizontal plate, *c*, through the center of which plate a gas inlet and outlet pipe, C, is passed from the chamber *b* into the chamber *a*, one end of said pipe extending up into the chamber *b* and the other into the chamber *a*. The lower end of the pipe C is bent and made to take a lateral course and connect with another pipe, C′, on the upper end of which is an air-chamber, D. The pipe C and air-chamber D, with its pipe C′, are connected by suitable fastenings, as at *d e*, to the division-plate *c* of the pile, as shown. On the upper end of the pipe C a cock, E, is applied for the passage of the gas to be burned, and on the upper end, *f*, of the barrel of the cock a screw-thread is provided to receive either a burner-tip or the hose of a gas-supplying apparatus when it becomes necessary to charge the chamber *a* with illuminating-gas by means of a force-pump on board of a steamer or other vessel lying alongside of the pile. The cock E is wholly in the upper chamber, *b*, of the pile, while the gas-pipe C and the air-chamber D, with its pipe C′, are wholly within the chamber *a*, except the connecting end *e* of the pipe C, which unites with the cock E, as shown. In the pipe C′ an inlet and outlet passage, *g*, communicates with the gas-chamber *a* through a rectangular slot or opening, *h′*, of a plug-valve, *h*, which is fitted to move air-tight up and down within the tube C′, said valve being inserted in the lower end of the pipe C′, and retained therein by a pin, *m*, attached to the valve, and fitted to travel in an oblong vertical guide-slot, *n*, of the pipe C, as shown, which pin and slot limit the throw of the valve. The upper section, B, of

the pile is provided with transparent windows *p*, opposite the burner-connection *f* of the gas-cock E, so that the light of the burning gas may be seen through this section on all sides.

One of the window-frames may be in the form of a hinged door, so as to permit ready access to the interior of chamber *b* for cleaning the glass panes or manipulating the burner, or for making a connection between the hose-pipe of a gas-supplying apparatus and the gas-pipe cock E at *f*, as occasion may require.

In the drawings, the upper section, B, is shown slipped down over the upper end of section A, and the pile thus constructed will admit of the upper section being removed bodily for the purposes just mentioned, as well as for convenience in setting the pile in its bed. The parts A and B may be provided with bolting-flanges for uniting them together, or they may be united by a bayonet-fastening connection. In the section B inlet and outlet passages or vents *r* and *r'* are provided for the ingress of air to promote combustion and the egress of heated air or products of combustion.

A hood or cap, F, of cone shape is made to form the top of the section B, and its lower edge surrounds and overhangs the egress-passages *r'*, in order to prevent drafts from blowing down upon the lighted burner, and still permit a free escape of the heated air from the flame.

Around the lower section, A, of the pile a large dishing flange, G, in form of a circular truncated cone is fastened, and this flange, by presenting a broad surface for bearing upon the bed of the water-way, and by being concave on its under surface, serves to sustain the pile in an upright position, as well as to anchor it after it has been embedded in the bottom of the river or water-way.

The extreme lower end of the pile is made of inverted-cone form, so as to readily penetrate the earth-bed while being lowered to its position by any of the well-known modes.

To operate with my beacon-pile, the lower chamber, *a*, by means of a force-pump, is charged with compressed illuminating-gas from a gas-holder, which is brought up to the pile on a boat, the gas being forced into the chamber *a* through the cock E, gas-pipe C, and valve-passage h^1. As soon as the pile is fully charged, by greatly compressing the gas within the chamber *a* the cock E is closed and the gas-charging hose removed from the gas-burner screw *f*, and a burner-tip, *f'*, supplied, as indicated in Fig. 2. After the act of charging the pile with gas, the valve *h* is forced up by the expansion of the gas from the position shown in Fig. 2 to that shown in Figs. 5 and 6, which latter position establishes a minimum opening, h^2, into and through the valve *h* for the flow of gas through the pipe C to the burner-tip *f'*, which minimum opening will not be greater than is required for a due supply of gas to a single burner under the maximum of pressure of the gas. The cock E is now opened and the gas lighted, and as the pressure of the gas diminishes in the chamber *a*, by reason of its combustion at the burner-tip *f'*, the valve *h* is caused to increasingly open the passage-way for the gas by the pressure of the air upon the valve in the air-chamber D. In this manner it will be seen that a proper supply of the gas to the burner is effected, the opening for the flow of the gas being diminished to a minimum, as at h^2, when the pressure is the greatest, and increasingly enlarging as the pressure grows less, and that this action will be automatically maintained until the opening h^1 of the valve *h* fully registers with the opening or passage *g'* of the pipe C.

One of these piles, without constructing it of undue proportions, can be charged with enough gas under high compression to burn continuously for a month or more, and, as the illuminated part of the pile is entirely above the reach of the water, its glass panes cannot become dimmed either by saline deposits or by contact with substances floating in and upon the water, as is the case to more or less extent with the illuminated buoys now in use.

In applying my piles in some localities, a pile-section of solid wood for a foundation may be driven into the bed of the water-way with a metal screw-ring applied to the top of the section to properly connect in any suitable manner with the lower end of my improved pile; and in the construction of the lower portion of my metallic pile I contemplate in some instances the application of broad metal screw-flanges, so as to screw the pile down to its seat in the bed of the water-way.

To afford the means for charging the chamber *a* with illuminating-gas in a very brief period of time, a gas-cock or other proper fixture for such purpose might be applied to the plate *c* at one side of the cock E, such fixture communicating directly with the chamber *a* through said plate by an aperture of the required capacity to allow a large volume of gas to be forced into the chamber *a* at each stroke of the force-pump.

I am aware that a floating buoy having a compressed-gas chamber and a burner-chamber, and a device for regulating the pressure of the gas in its passage to the burner, is not new, broadly, as the same is set forth in Letters Patent No. 190,979.

What I claim is—

1. The combination of a hollow metallic stationary illumination guide-pile provided with a gas-burner, windows, and vents, and with means by which it can be firmly secured in the bed of a water-way, and a gas-pipe, through which gas is introduced under pressure into the pile from a suitable supply-chamber, and from which it is discharged to a burner within the upper transparent and ventilated portion of the pile, substantially as and for the purpose described.

2. The stationary illumination guide-pile having two chambers, the lower one of which

is gas-tight, and provided with means by which it is firmly secured in the bed of a water-way, and the upper one provided with transparent windows, air-vents, and a gas-burner, substantially as and for the purpose described.

3. The combination, in an illumination guide-pile, of the self-regulating valve *h*, air-chamber D, gas-chamber *a*, and gas-burner pipe C, substantially as described.

4. The combination of the flange G, of truncated-cone form, with the hollow illumination guide-pile, whereby the pile is firmly anchored in position, substantially as described.

Witness my hand in the matter of my application for a patent for an illuminated navigation guide-pile.

MARSHALL PARKS.

Witnesses:
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