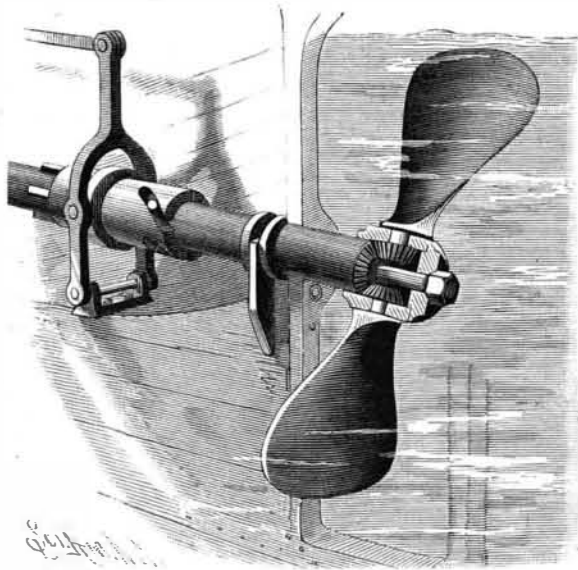


AN ADJUSTABLE PITCH SCREW PROPELLER.

An invention providing means whereby the blades of a propeller may be changed to any desired angle or pitch required, without the stoppage of the engine, is



STEVES AND HILL'S SCREW PROPELLER.

shown in the accompanying illustration, and has been patented by Messrs. William J. Steves and Andrew J. Hill, of Mechanicsville, N. Y. A sleeve, having on its rear end a beveled gear, is mounted on the propeller shaft, and the shank of each propeller blade, projecting down through the hub, is made with an integral bevel gear to mesh with that of the sleeve. The latter has collars where it passes into the hull, and on its interior end are four integral pins, which are received in the cam slots of a second or reversing sleeve, mounted upon the shaft and upon the inner end of the first sleeve. The inner end of the reversing sleeve has a wide interior collar with a series of longitudinal grooves engaging with corresponding feathers formed longitudinally on the shaft, there being also an exterior collar being engaged by an interiorly grooved ring having trunnions on opposite sides, journaled in the U-shaped arms of a lever, whose lower ends are fulcrumed upon a pillow block fixed to the bottom of the boat. To the upwardly extending arm of this lever is pivoted a rod adapted to extend back to the engine room or other convenient place, where it may be operated by hand or steam power. While the propellers are revolving, a movement of this lever and strap will also move the interior sleeve, and its cam slots, through the pins on the inner end of the other sleeve, will revolve the latter, with its bevel gear, to turn the flukes of the propeller to the desired angle or pitch.

AN IMPROVED HOUSEHOLD ASH SIFTER.

A convenient sifter and receptacle for ashes, whereby the partially burnt coals can be effectively separated from the ashes, and the work can be easily done at the



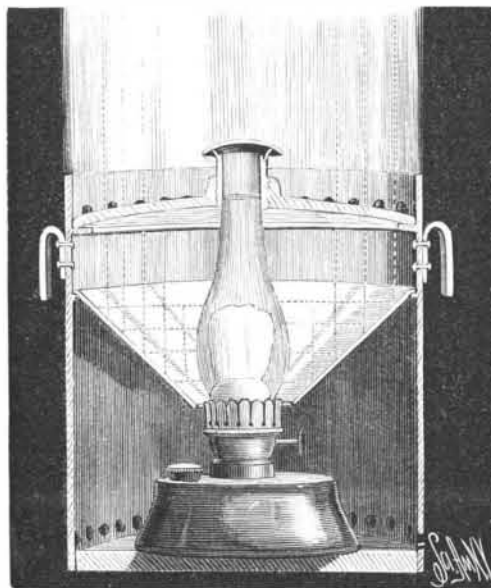
FALARDEAU'S COAL AND ASH SIFTER.

fireside without causing annoyance or inconvenience from the escape of dust, is shown in the accompanying illustration, and has been patented by Mr. Dennis L. Falardeau, of Cohoes, N. Y. The sifter is supported within a case or outer vessel, which has a pivotal bail to carry it by and a close-fitting cover. For a little

more than half its depth the sifter is made closed or imperforate, the other part being made of fine wire cloth or netting, or of perforated metal plates if desired; but a considerable portion of this perforated part is made as a door, through which the coal and ashes to be sifted are passed, the door being hinged at one side and having a latch or lock button at the other edge. There is also a door, arranged to be buttoned or latched, in the lower portion of the sifter, through which the sifted coal or cinders may be discharged, when the sifter is lifted by its bail from the outer case. The sifter is hung on trunnions at its ends in suitable brackets fixed within the outer case, and is rotated by a crank applied to one of the trunnions, the outer case being made large enough to hold a considerable accumulation of ashes, and its close-fitting cover being left on until all the dust from sifting has settled, when the slate and clinker can be conveniently picked out, and what remains is ready to be put on the fire, the meshes of the wire cloth in the sifter being fine enough to save all the small coals. The sifter may also be made to be supported from trunnions on its opposite sides, resting in the forked upper ends of stirrups pivoted on lugs in the bottom of the case, when the sifting is done by rocking the sifter by means of a shaker bar extending through one end of the outer case. A sifter and ash receptacle of this kind can be kept and used in any room of a house, where most convenient, without scattering dust over clothing and furniture.

AN IMPROVED SIGNALING APPARATUS.

A signaling apparatus designed for a variety of purposes requiring an upwardly projected light, such as



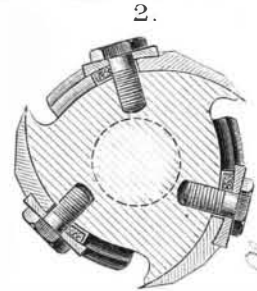
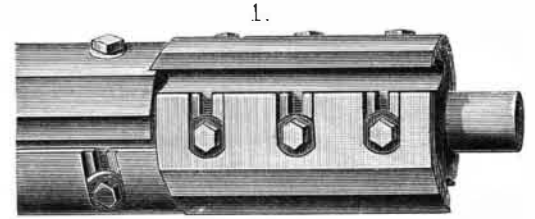
QUATERMASS' SIGNALING APPARATUS.

illuminating the rigging and signaling on shipboard, for store windows, for use on railroad trains, etc., has been patented by Mr. Reuben Quatermass, of Moline, Kan., and is shown in the accompanying illustration. A cylindrical casing, adapted to receive a lamp, is made with a perpendicular sliding door, the casing having a series of draught holes near its bottom and ledges upon its inner walls, just above the lamp flame. An inverted conical reflector surrounds the lamp, its outer edges resting upon these ledges, the light striking and being reflected upward, as shown in dotted lines. Upon a ledge in the casing, near its top, rests a glass concavo-convex shield, centrally apertured, and having a threaded collar, to which is fitted a cowl for receiving the products of combustion and allowing them to escape without permitting rain or snow to enter. Any water or snow deposited on this glass shield runs out through a series of holes in the casing in a line with the edge of the shield. By means of this lantern a column of light may be projected to a great height, illuminating the smoke and steam of a locomotive, so that they may be seen over the tops of embankments, trees, etc., and producing a halo visible at long distances.

AN IMPROVED CUTTER HEAD.

A cutter head with which the bits are interchangeable, in such manner that both ends of the bits may be worn alike, and which can be readily adjusted to balance accurately, is shown herewith, and has been patented by Mr. John C. Humphreys, of Braxton Court House, West Va. The cutter bar, stock, or bit holder has a series of exterior convex surfaces, eccentric to the axis of the cutter bar, as shown in the cross sectional view, Fig. 2, and is shaped so that, looked at from opposite ends, it presents two three-leaved cams, each of which extends half the length of the cutter bar, the bits of one series being intermediate of those of the other. The bits are secured to their places by screws passing through open-ended slots and washers in the bits, the washers fitting within countersunk marginal portions of the slots, and each washer having a pocket on its inner side in which may be placed shot or other weights, for making the different portions of the cutter head occupied by the several bits of like weight. By removing or adding weights, the adjust-

ment can be very accurately effected without grinding the bits for such purpose, as has been common hitherto. The bits are arranged so that only one will cut at a time, and project at such tangents and are so shaped on their backs that their outer surfaces back of the cutting edges lie inside of the circle described by the cutting edges, thus cutting the wood at an angle of fifteen to twenty degrees, instead of about forty-five, as has been common heretofore. With such a cutter



HUMPHREYS' CUTTER HEAD.

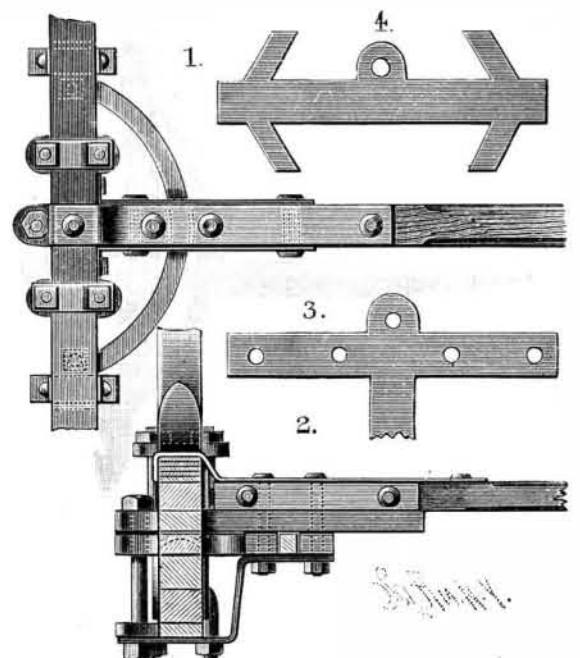
head and bits the latter do not drag and leave creases or ridges in the surface of the wood being dressed, but make a smooth cut, while economizing power.

To Free Iron or Steel from Rust.

As often happens, a chance now occurs to note a process whose value should not be underestimated. A bookbinder wishing to blacken iron places rusty iron or steel in stale beer (triple beer). After five or six days the rust is perfectly dissolved from the metal, and a dark brown to black surface takes its place. Some days later the rust reappears. This affords a ready means of cleaning old or delicate iron objects from rust.—*Uhland's Tech. Rund.*

AN IMPROVED FIFTH WHEEL.

A fifth wheel for vehicles, so constructed that it can be readily taken apart and put together, while it has great strength and simplicity, is shown in the accompanying illustration, and has been patented by Mr. Edward H. Cox, of Slate Lick, Pa. Fig. 1 is a plan view and Fig. 2 a longitudinal section, Fig. 3 showing a plan of the upper fifth wheel plate, and Fig. 4 a modified form of the lower fifth wheel, with inclined bearing arms in lieu of the base ring, for vehicles in which the front axle does not turn under. The lower fifth wheel plate, axle stock, and axle are bound together by clips passed through the usual bottom plate. The upper plate, head block, and spring are likewise bound together by clips, and the king bolt, in front of the axle, is passed through forwardly projecting eyes formed on the upper and lower fifth wheel plates and on the bottom plate. The front end of the reach abuts against the rear end of the head block, to which it is secured by the top and side stays. A reach plate of the upper fifth wheel, bolted to the under side of the reach, has a bottom extension with a downward opening slot in which the rear base ring on the lower fifth wheel is fitted to turn. An offset strap closes this slot, preventing the base ring from rattling, and the lower arm of the strap extends forward under the clip plate and receives the king bolt, on which it thus swings loosely with respect to the axle in turning. With this construction all the parts can be readily put together or taken apart, and they are not liable to quickly wear out.



COX'S FIFTH WHEEL FOR VEHICLES.