BRADLEY'S CUSHIONED HAMMER.

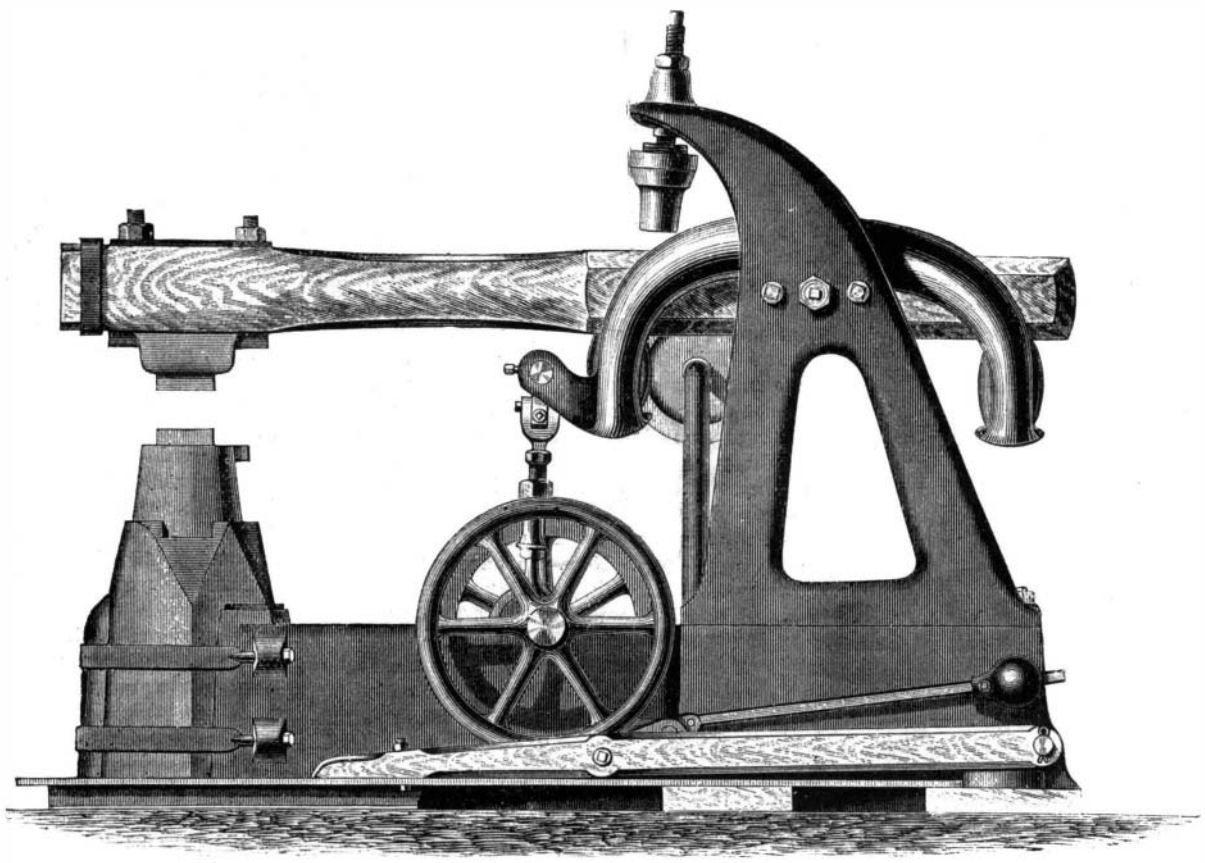
This invention, illustrated herewith, is a hammer claimed to be especially adapted to all work which requires a continuous, exact, positive, forcible, and yet elastic stroke. The anvil and anvil block are of cast iron, and are made separate and adjustable. The latter has a separate foundation independent of that of the main bed. The hammer is nicely balanced, swings upon two adjustable hardened steel centers, and is put in motion by a broad steel eccentric which operates in connection with the yoke and rubber cushions, and is adjustable and governs the length of stroke.

The cushion at the apex of the standard serves to assist the lower rear cushion in heavy work, and also to check its upward motion. It is claimed that no bind or friction can result from an unequal adjustment bp the set screws on the top of the yoke, thereby twisting the latter as the universal joint connection regulates the result upon the broad eccentric below, leaving it to work free from incumbrance.

The power is applied and regulated by the use of a foot treadle running around the bed of the hammer, in such a manner that the operator can stand in front or on either side. A gentle pressure on the treadle brings the tightener in connection with the belt upon the pulley, and thus varies the stroke in proportion to the pressure applied. On removing the foot, the treadle flies up, bringing the brake upon the balance wheel, arresting it instantly, and leaving the hammer up, as it cannot stop with the dies closed.

The advantages claimed for this machine may be briefly summarized as follows: It is adjustable in line of action, length of stroke, rapidity of motion, and weight and force of blow, all of which may be varied and controlled at the will of the operator. It has been found well suited to the exceedingly difficult swedging of cotton spindles. Its cost of repairs is alleged to be small, and its durability great, while it is compact, portable, and has but little friction and no stubborn jar. The resting of the main bed and its uprights upon a foundation separate from that of the anvil relieves it materially from the concussion of the hammer. The force and power of the blow is greatly influenced by the reactive and united action of the cushions. So harmonious is this combined action upon the motion of the helve, that it is stated that an observer holding his hand upon the working parts when under the most rapid and violent movement can hardly identify the strokes of the hammer.

Further information regarding this invention may be abtained by addressing the Bradley Manufacturing Company, Syracuse, N. Y.



BRADLEY'S CUSHIONED HAMMER.

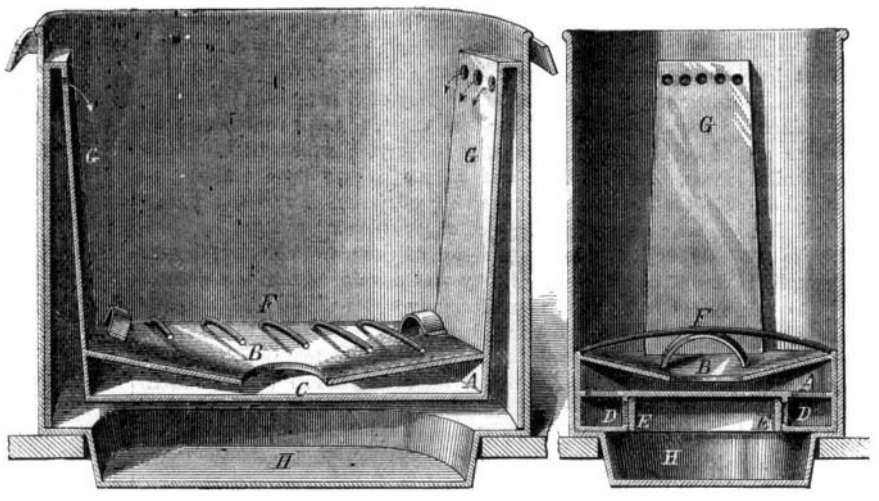
IMPROVED WASH BOILER ATTACHMENT.

Our engraving illustrates a device which may be placed in any ordinary wash boiler serving to clean the clothes by causing currents of hot water to pass through them in one direction. Figs. 1 and 2 are longitudinal and transverse sections of the apparatus, clearly showing its interior arrangements.

A is an oval rim, of a size suitable to fit within the boiler. Attached thereto are the two bottoms, B and C, the former of which is funnel shaped and open in the middle, so that the water above it may flow down into the space between the two bottoms. This space communicates with two boxes, D D, which are situated beneath the bottom, C, and in the sides of which are arranged valves, E E. The clothes to be cleaned are laid upon the rack, F. G G are hollow pillars, in the upper parts of which orifices are made.

The seeds being placed in the receptacle, H, heat is applied. The steam generated first closes the valves, E E, then, with the hot water, ascends the hollow pillars and, escaping through the apertures, falls upon the clothes. As soon as the pressure in the chamber, H, is diminished, the valves, E E, are opened by the weight of the water within the boxes, D D. It is claimed that, in this manner, a constant circulation will be maintained, and that the clothes will be rapidly, effectually, and economically cleansed without becoming injured or being unnecessarily handled.

Fig. 1 Fig. 2



WASH BOILER ATTACHMENT.

Patented through the Scientific American Patent Agency, December 17, 1872. For further particulars address Messrs. Tinner & Tregear, Stockton, Pa.

Comedy and tragedy were first exhibited in Athens, 562 B. C

Method of Discovering Alum in Flour or Bread.

M. Buchner, says *Les Mondes*, in the course of recent investigations, has determined that a single drop of alcoholic extract of campeachy wood, placed upon pure flour or bread, causes a brownish yellow stain, and that if the flour contains alum in the proportion of one or two per cent, the color will turn to a grayish blue or violet gray. With one half per cent of alum, the tint is reddish yellow with a border of gray blue, and small blue spots can be discovered in the disk of color by examining it with a lens. One quarter per cent of alum is the limit of the reaction where the blue border is no longer visible, although the small spots are faintly discernible.

A New Method of Viewing the Chromosphere.

A paper on this subject was recently read before the Royal Society by J. N. Lockyer and G. M. Seabroke. An artificial eclipse is produced by covering the sun's disk by a disk of brass. It is, in fact, the replacement of the moon by another sphere or semisphere (or rather a disk, in this method). The idea occurred to both authors at different times. The image of the sun is formed on a diaphragm, having a circular disk of brass (in the center) of the same size as the sun's image, so that the sun's light is allowed to pass. The chromosphere is afterwards brought to a focus again at the position usually occupied by the slit of the spectroscope, and in the eyepiece is seen the chromosphere in circles corresponding to the C and other lines. A certain lens is used to reduce the size of the sun's image and keep it of the same size as the diaphragm at different times of the year; and other lenses are used to reduce the size of the annulus of light to about $\frac{1}{8}$ inch, so that the pencils of light from either side of the annulus may not be too divergent to pass through the prisms at the same time, and that the whole annulus may be seen at the same time. There are mechanical difficulties in producing a perfect annulus of the required size, so one $\frac{1}{2}$ inch diameter is used, which can be reduced virtually to any size at pleasure. The proposed photographic arrangements are as follows: A large Steinheil spectroscope is used, its usual slit being replaced by the ring one. A solar beam is thrown along the axis of the collimator by a heliostat, and the sun's image is focussed on the ring slit by a $3\frac{1}{4}$ inch object glass, the solar image being made to fit the slit by a suitable lens. By this method the image of the chromosphere received on the photographic plate can be obtained of a convenient size, as a telescope of any dimensions may be used for focussing the parallel beam which passes through the prisms on to the plate.

Complete Drainage of Dwelling Houses.

The importance of good drainage is advocated as follows, in the last issue of *The American Builder*:

Where the geological character of the ground is such that nature has not made ample provision for removing the surplus water at all seasons of the year, a builder cannot expect to have the advantages of a dry cellar and a dry yard unless a system of complete drainage is commenced below the foundation of the lowest stones or bricks of the cellar wall. Many builders have made the grave mistake of deferring all provision for drainage until after the superstructure was finished.

Very few builders, either in the country or city, can be induced to introduce a proper system of drainage beneath and around a dwelling, or a large barn. For this reason, the proprietor himself, or some competent representative, should supervise this important part of the building, as soon as the excavation for the cellar is completed. A deep ditch should first be sunk so that water will flow readily away from the cellar to some distant point, where it will mingle with some stream. Before any part of the foundation wall is laid, let a channel be sunk about three inches deep around the outer edge of the excavation, partially beneath the bank of earth, for receiving the water that would otherwise come in contact with the foundation wall and find a passage into the cellar. The most convenient way to sink such a channel is to make a sort of a rammer of a stick of hard timber. Should the earth be exceedingly compact, is the substratum is in many sections of the country, it may be necessary to use an old axe for cutting down the sides of the channel, after which the middle can be removed with a sharp pick. When the channel is completed, let two or three pails of water be poured into it at the highest point; and if it does not flow readily away into the ditch, let the channel be sunk deeper in places until the grade is uniform. Then let drain tiles two inches in diameter be laid with much care in the channel, and be covered with gravel. If the drain tiles are thoroughly burned, and if they are laid as suggested, the drainage will be complete as long as the building endures. One or two poor drain tiles, however, will spoil an excellent job, as they will disintegrate and obstruct the watercourse. After the foundation walls are carried up above such a drain, the excess of water in the earth, that would come in contact with the walls, will form direct passages through the ground to the tiles, and will quickly pass away without wetting the walls. By this means the earth around the building will never become excessively wet, even while protracted storms prevail; the walls of the cellar will never become damp or covered with mildew, and the cellar bottom will always be dry.

To keep the watercourse of the drain tiles always free from silt, the waste water from the cistern should be directed into the tiles, at the highest point of the drain. During heavy showers of rain, the tiles would be thoroughly cleansed of all silt, several times every year. But it is difficult to introduce such a system of drainage after a building is erected.

Minnesota Tree Planting.

The Minnesota newspapers are calling upon the State Legislature not to adjourn without taking some action in the matter of appropriating a sum of money for the purchase of seed trees to be distributed to each town throughout the State. They especially urge that trees be planted on the prairies of the State, for the benefit of the farmers who fill up the broad stretch of land between the railroad and river, so that they may thus fence their roads and farms with forest trees. Already has this been done to some extent. The system has been adopted on all the lines of the St. Paul and Pacific Railroad, and already have many miles of trees been planted. The same course has been pursued by farmers in the neighborhood of Hutchinson, who have set out from 1,000 to 20,000 trees each.