

**NEW TRUNNION AND TRIMMER.**

This improved trunnion is designed for oscillating engines, drying calenders, car axles, fly wheel shafts, crank pins, etc., and is of great utility wherever there is a bearing subjected to great friction and wear.

It is a well known fact that while car axles frequently heat and cut, it seldom happens that the journals of a locomotive driver shaft become heated, although they are subjected to greater pressure; and a driving shaft under a locomotive, it is stated, will run for fifteen or twenty years, whereas a car axle will run for about two years only. To lessen friction and increase the durability of car axle and other bearings, Mr. Thomas Hill, of Newark, Alameda county, California, has perfected and patented the improved trunnion and trimmer shown in the accompanying engravings. Fig. 1 shows the driver as applied to a steam trunnion or tubular shaft. Fig. 2 shows the application of the device to car axles.

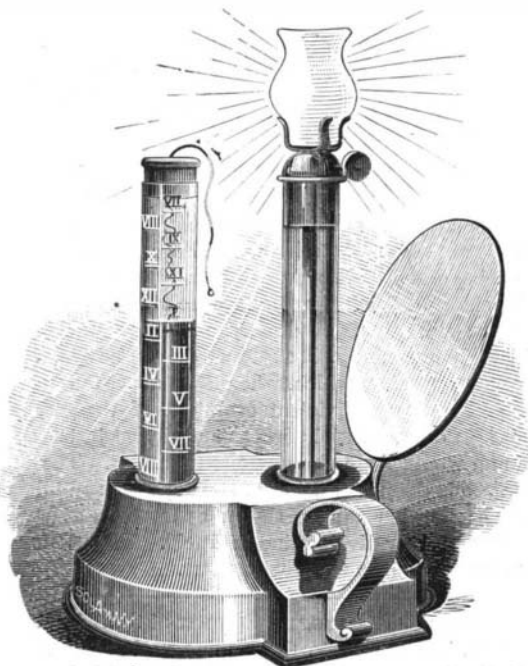
The trunnion is made of two parts. The inner part, through which the steam passes, is made with four or more projections, B, with corresponding spaces or depressions, C, between them, so that a transverse section represents a cross. These projections, B, are turned off in a lathe, and a sleeve, A, is fitted to slide on over them. This sleeve is made fast to the arms with a set screw or pin, one inch from the end, and is turned smooth on the outside to form a journal. A hole is made through this trunnion for the passage of steam, which is brought to it through the pipe, A. This pipe enters the hole in the trunnion, and is packed so as to be steam tight. Whenever the sleeve, A, becomes worn, it can be removed, and a new one substituted with but little delay; the cylinders, with the ordinary trunnions, would have to come out. The spaces formed by the depressions, C, in the inner part, allow a free circulation of air about the trunnion, either naturally or by blast, so that the journal is kept cool and will work better. A trunnion thus constructed can be introduced advantageously for oscillating engines, drying calenders, or in any place where it is necessary to have a joint through a movable bearing or journal.

The trunnion and trimmer may be applied to car axles or shafting with great advantage whether they are old or new; when applied to shafting it may answer both as a coupling and a journal; it is also especially adapted to thrust bearings. As the wear comes wholly upon the sleeve the expense of renewing a shaft or axle is avoided, and the sleeves can at any time be replaced, at a slight expense, in a few minutes, when the old one becomes worn out. When applied to a car axle or shaft the chambers, C, by acting as receptacles for oil, assist in lubrication, as the oil is received and discharged at every revolution through the holes.

For further particulars address the inventor, at Newark, Cal., as above, or at 64 First street, San Francisco, Cal.

**NEW TIME-INDICATING NIGHT LAMP.**

The accompanying engraving represents an ingenious and very simple time-indicating lamp, recently patented by Mr. Henry Behn, Sr., of this city.



**TIME-INDICATING NIGHT LAMP.**

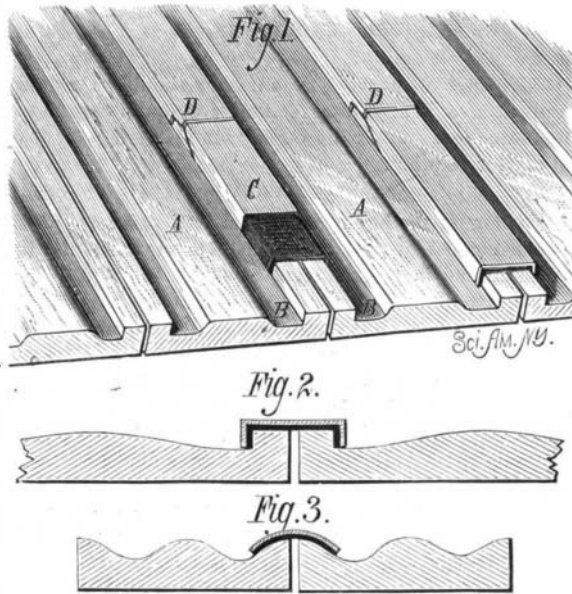
The invention consists in a reservoir for containing oil, and two vertical glass tubes rising therefrom. The lamp burner is placed on the top of one of these tubes, and the other contains a float, and has the hours marked on it. Near the foot of the tube which supports the burner there is a re-

flector, which receives light from the burner and throws it upon the graduated tube.

As a certain quantity of oil will be burned each hour, the sinking of the oil will indicate approximately the time. The inventor, in some cases, dispenses with the float and uses colored oil.

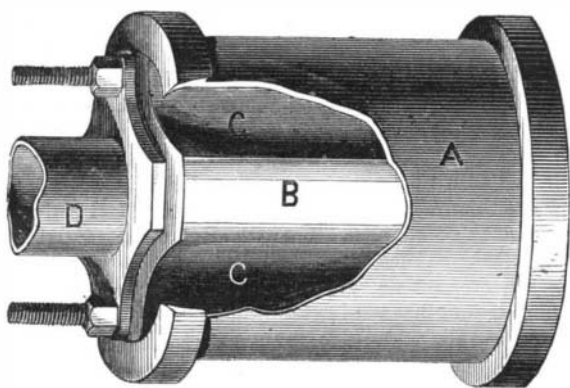
**AN IMPROVED ROOFING.**

The accompanying engraving shows in perspective and in section a new roofing recently patented by Mr. Nathan H.



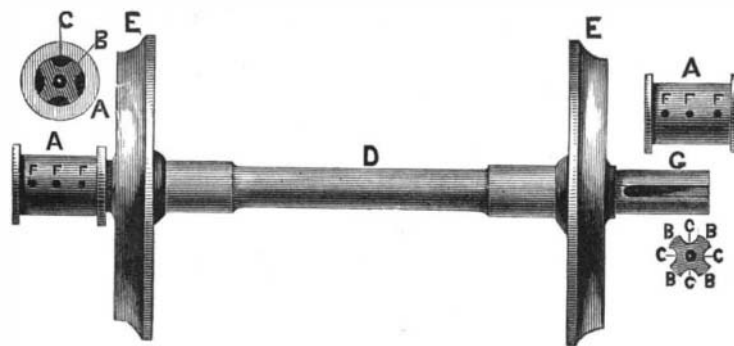
**BROWN'S ROOFING.**

Brown, of Detroit, Mich. This invention consists in the peculiar form of roofing boards and metallic batten strips



**Fig. 1.**

**HILL'S TRUNNION AND TRIMMER.**



**Fig. 2.**

which cover the joints between the roofing boards, and in a novel method of connecting the ends of the metallic batten strips.

The boards, A, have, near their adjacent edges, grooves, B, for receiving the edges of the metallic batten strips, C, the form of which may be seen in Fig. 2. Between the metal batten and the boards there is a strip of tarred paper or roofing felt which renders the joint water and air tight. The batten strip is made in sections, one end of each having its flanges beveled, while the other end is cut and turned down, forming locks for receiving the beveled flanges of the succeeding strip, as shown at D in Fig. 1. A modified form of board and batten is shown in Fig. 3. The boards should have a coat of paint before applying the battens, and it should afterward be covered with two coats of fire and water proof paint. The nails which secure the boards are covered by the battens.

The inventor states that the roofing boards may be readily made by means of an ordinary moulding or planing machine, and says that the roof made on this plan will not be more expensive than a shingle roof, while it has many points in its favor.

For further particulars address the inventor as above.

**Persistence of Images on the Retina.**

It will be remembered that about the beginning of last year Dr. Boll threw some new light on the structure of the retina by the discovery of a substance of purple color in the last retinal layer, in which a portion of the "rods" is engaged. It had escaped notice before, because of its very rapid disappearance on the action of light. Dr. Boll felt himself warranted in saying that the formation of images on the retina was a veritable photography. Subsequently Dr. Kühne discovered the organ by which this purple is incessantly reproduced, namely, the mosaic layer, or hexagonal epithelium of the choroid, which, therefore, it has been proposed to call the retinal epithelium. M. Giraud Teulon, in a recent report, calls attention to some modifications in theory required by the unlooked for physiological function referred to. Thus as regards the persistence of positive images (that is, the continuance of the sensation after the impression that produced it), the simple fact of chemical decoloration of the retinal purple by the light, involving a certain time for its reconstitution, by the secreting action of

the mosaic layer, gives a sufficient account of the phenomenon. Then, as to accidental negative images and their successive phases of coloration, the photo-chemical theory replaces Young's perfectly arbitrary explanation, based on three supposed different kinds of fibers, by a simpler one, which is this: A given monochromatic light chemically alters, in a constant and uniform way, the retinal purple which it encounters. Now, the rod, or primitive nerve element, has its base immersed in the bath formed of this substance.

We have only, then, to suppose in this element the power of feeling in a different way, the intimate contact of different media, exactly as the papilla of the nerves of special sensibility (like those of smell and taste, for example) appreciate or carry to the sensorium stimulations as varied as is the nature of the liquids or effluvia which come to them. When the primary cause, the luminous object, is withdrawn, the nerve fiber, according to the progress of the reconstitution of the purple, announces by successive testimonies the gradual renewal of the normal bath.—London Times.

**The Secrets of a Bushel Measure.**

The *Pharmaceutical Journal* gives some curious information respecting the variable results obtainable in the measurement of dry goods. The Weights and Measures Act of England, passed last session, expressly prohibits "heaped measures," and requires that the measure shall be filled as nearly level as the size and shape of the articles will permit. This led to some experiments as to the results following different modes of "striking" a measure, that is, of bringing the level of the contents of the measure into the same horizontal plane as the brim.

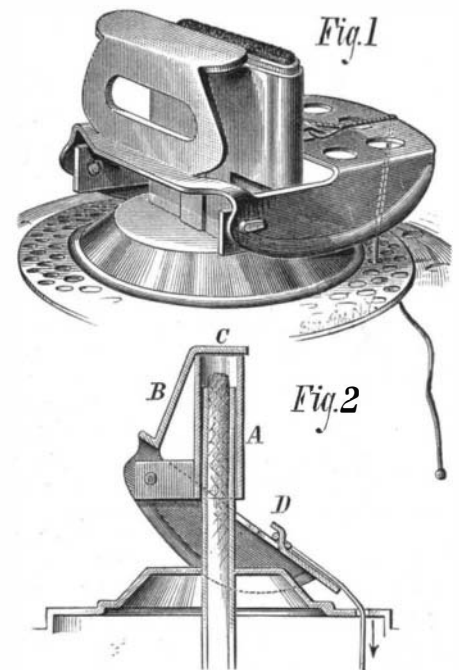
A sample of corn was taken, and the true weight of a standard bushel of it was ascertained to be 57 lbs. 2 ozs. But when the ordinary flat strike is used the corn left in the measure weighs 57 lbs. 3 ozs., while, if the ordinary round strike or roller be employed, the quantity of corn is increased to 57 lbs. 9 ozs. If the measure be shaken when struck with a round ruler the weight rises to 62 lbs. 15 ozs. The diameter of a vessel, in proportion to its depth, appears to

make little difference in measuring grain, unless the diameter is less than one third of the depth. The Board of Trade standard dry measures—the bushel, half bushel and peck—have their diameters nearly double their depth, while those for liquids have their diameters nearly equal to their depths. But it is found that, particularly in the sale of such articles as

coke, potatoes, etc., the proportions adopted in the standards for dry goods are those most likely to give just results.

**A NEW LAMP EXTINGUISHER.**

The accompanying engraving represents a novel and simple lamp extinguisher recently patented by Mr. Albert Hall of this city. It may be made and sold separately from the burner, and may be readily applied by the purchaser to lamps already in use. To the slide tube, A, which fits over



**HALL'S LAMP EXTINGUISHER.**

the wick tube of the burner, is pivoted a lever frame, B, which carries the cap or cut off, C. The lever frame, B, has cams formed on it which bear upon the bottom plate of the burner. A cord is attached to the lever frame, at D, and extends downward through one of the perforations of