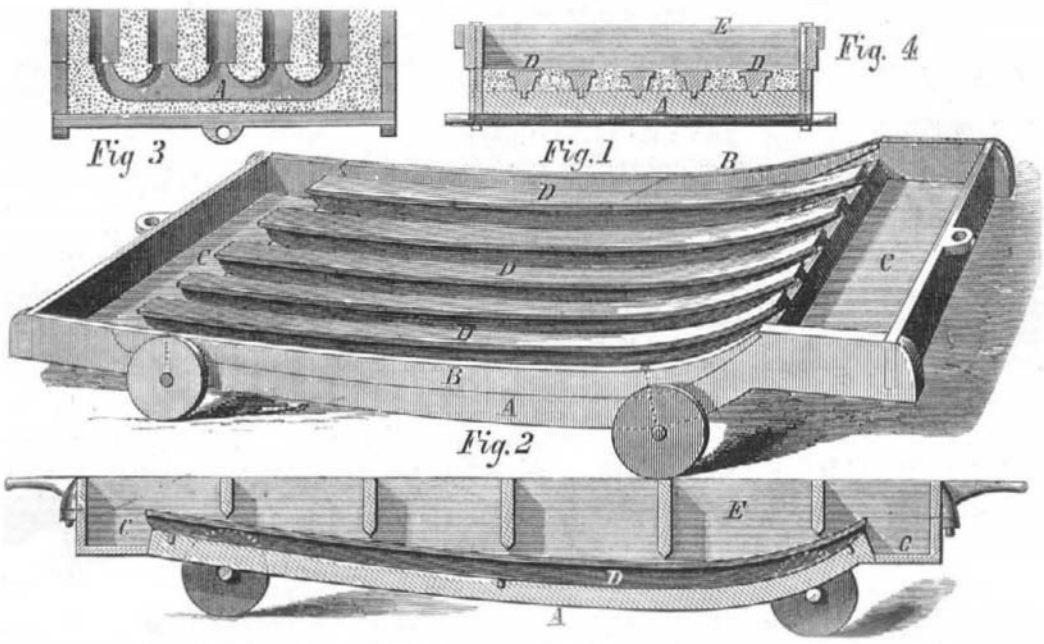
MOLD FOR CASTING AND CHILLING SLEIGH SHOES.

The improvement now illustrated is designed to save the time and expense involved in grinding and polishing sleigh shoes, by giving them smooth and hard faces in the casting, without, at the same time, materially injuring their strength or incurring liability to loss in the process.

A, in the figures, is the lower part or nowel of the flask. the bed of which is cast in one piece and of a shape to conform to the face of the shoe intended to be cast. The sides, B, are cast separate and are fastened to the bed by means of bolts. The ends, C, are made detachable, being hooked on to the bed casting in the manner shown in Fig. 1. This is doue to preserve the flasks, as, if they are made in one piece with the bed, they are apt to crack off. At D are shown the patterns, which are placed upon the bed of the nowel and kept in place by dowels. The latter serve also the purpose of core prints. When sand has been placed in the nowel, as seen in cross section in Fig. 4, and the patterns have been withdrawn, a connecting chamber is formed at one end thereof, in the manner shown in the plan view, Fig. 3. The cope, E, which is a wooden frame with transverse ribs, and which is provided with handles at its ends, is then applied to the top of the nowel, as shown in section in Fig. 2, and the process of casting is carried out. The metal is chilled as it comes in contact with the smooth surface of the bed, and the shoes are withdrawn from the mold ready for service. The nowel is mounted on wheels for convenience in moving it.



BUTMAN'S MOLD FOR CASTING AND CHILLING SLEIGH SHOES.

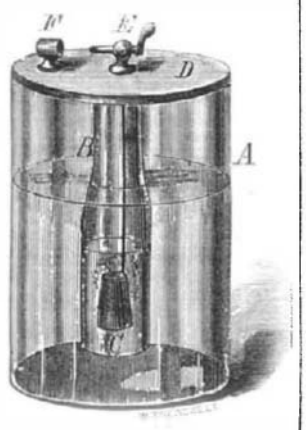
It is claimed that shoes produced in this way are superior to the old ones and command a higher price, while there is a saving attending the use of the new mold.

Patented through the Scientific American Patent Agency for Volney A. Butman, of Ironton, Wis., June 11, 1872. Further information may be had by addressing V. L. Benjamin, Fond du Lac, Wis.

HOW TO MAKE A CHEAP HYDROGEN LAMP.

The principle on which the hydrogen lamp is based is the property of platinum sponge to absorb large quantities of oxygen, so that, when a jet of hydrogen is directed upon it, a rapid combination of the gases ensues, attended by the evolution of intense heat and faint light. The lamp is useful not as a means of illumination but for supplying the place of matches, or other means of obtaining fire whenever a quick light is required.

Our figure represents the ordinary form of construction. A is a glass vase, B a bottomless glass vessel attached to the metal cover D, C is a cylindrical piece of zinc suspended by a wire from the cover, E is a stop cock kept closed by a spring and readily opened by the pressure of the finger. F is a metal capsule, in which is placed a small portion of platinum sponge. To set the instrument in operation, a weak solution of sulphuric acid and water is poured into A. This attacks the zinc, causing hydrogen gas to be evolved, which fills the space in B and forces out the water. The stop cock should be kept open until the atmospheric air is entirely out of the receptacle. As soon as the pure hydrogen issues, the jet should be directed upon the platinum sponge, which will immediately become incandescent and ignite the hydrogen which will burn with a pale blue flame. When the hydrogen in B is exhausted, the light will be extinguished, the solution in the outer jar will again enter to its proper level, again attacking the zinc, when the same process will be repeated. Such a lamp will remain in working order until the power of the acid is exhausted or the zinc destroyed. It generally stays in good condition, giving fire immediately, for from two to three weeks.



As we have lately received several queries of how to construct this lamp cheaply, we add the following method, the materials being the least expensive and the easiest attainable that we can suggest. The outer vase may be made from a good sized preserve jar by cutting off the upper portion by means of a woolen string moistened with turpentine. For the inner tube, B, an ordinary lamp chimney will answer. The cover, D, can be made from sheet brass and the chimney attached to it by some good cement. The stop cock can be turned by a metal worker, from whom also the piece of zinc may be obtained; or the pewter cock from the top of a seltzer or mineral water flask, that can be readily bought from any druggist, may be employed, bending the tube, used for the exit of the water, straight and reducing its orifice to a very small hole. An empty metallic cartridge case will do for F. The platinum sponge can be purchased from any dealer in chemicals at a small cost. The proportions of water and acid used are about one ounce of the acid to a pint of water.

New Sugar Dryer.

C. H. Hersey, of South Boston, Mass., is the inventor of a new machine for drying sugar and other substances, which is said to be simple and effective. The machine consists of an outer cylinder from five to six feet in diameter and twenty-five feet long, inside of which is a steam cylinder about three feet in diameter and twenty feet long. The sugar is carried aroud in the outer cylinder by ledges on the inside of the cylinder, and is dropped in a continuous shower upon the outside of the steam cylinder, both cylinders being connected together and revolving at the same time; the sugar slides off the heating cylinder hot, and is thus dried. The machine stands inclined slightly, so that the sugar going in at one end is gradually worked forward to the other, where it falls into a revolving screen, which separates it into the various grades of coarse and fine sugar. The capacity of the machine exceeds thirty barrels per hour.

LAW'S SHUTTLE BINDER.

The invention we illustrate in the annexed engravings consists in an improved method of actuating the mechanism by which shuttle binders are operated.

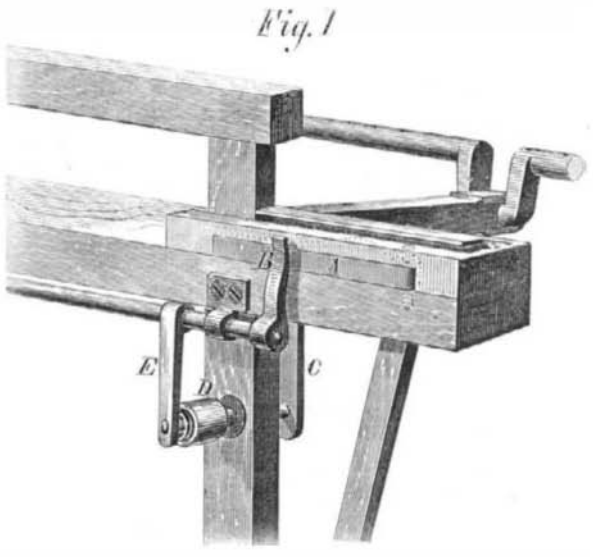
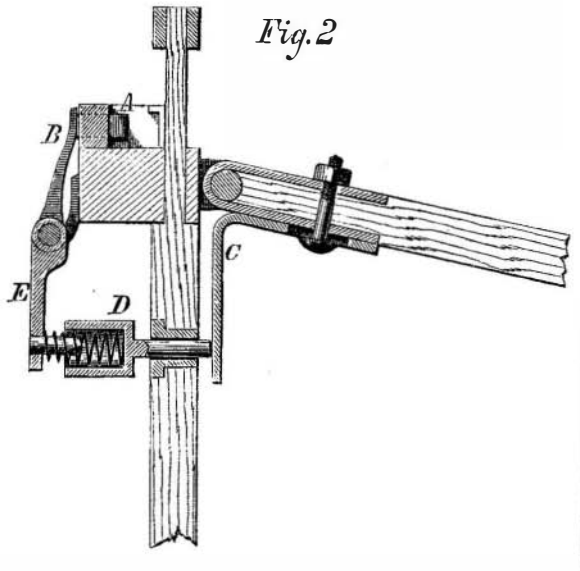


Fig. 1 represents a portion of the lathe of a loom, showing part of one sword, one rod connecting the lathe with the crank, and the device attached. Fig. 2 is a detail sectional view of the same.



The shuttle boxes are situated at the ends of the lathe beam and the shuttle binding levers, A, are pivoted in the sides of the boxes in the ordinary way. The protecting rod is provided with arms for operating the levers, shown at B, as in other looms. For producing the proper motion in this rod, the inventor provides the following simple and ingenious arrangement:

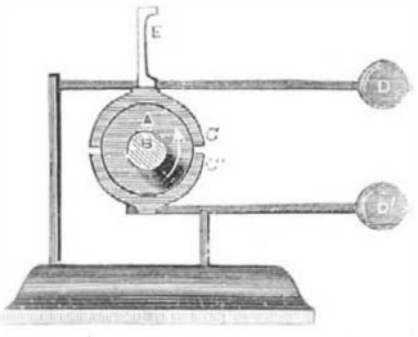
The arm, C, is attached in the manner shown in Fig. 2 to one of the rods which connect with the cranks; in a hole made through the opposite sword is placed the pusher, D, and to the protecting rod is affixed the arm, E. A spiral spring is connected at one end with E, and the other end is carried by the socket of the pusher, D, as delineated in Fig. 2. The device is brought into action by the downward movement of the crank, which takes place at the same time that the shuttle is driven into one of the boxes. This downward movement forces the arm, C, against the pusher, D, which presses outward, with a yielding pressure, the arm, E; the effect of which is to force the upper arms of the rod, B, against the binding levers, A, and thereby retain the shuttle in whichever of the boxes it may happen to be in, until the crank rises enough to carry the arm, C, away from the pusher. As soon as this occurs, the device ceases to operate, and the rod is turned by a spring (which may be seen in Fig. 2) so as to throw the arms, B, away from the levers, A, and release the shuttle just in time for it to be thrown.

The inventor claims that with this binder the shuttle is prevented flying out of, or turning in, the box and the cops do not break on the shuttle spindle. It renders needless the usual springs on the binding levers, and effects saving in power and supplies, while its own first cost is a mere trifle.

Patented through the Scientific American Patent Agency, June 11, 1872, by Mr. Henry H. Law, of Gloucester, Camden Co., N. J of whom further information may be obtained.

Apparatus for Testing Lubricators.

A is a friction drum or pulley of cast iron, about 3 inches diameter, keyed on a shaft B. C and C′ are two clips or saddles of brass, each extending nearly half round the circumference of the drum, and pressed to it with a constant pressure by means of the two weighted levers, D D′. E is a thermometer fixed on the top saddle or clip C, and serves to indicate the heat caused by the friction of the drum revolving between the two saddles, C C′. The method of using is as follows: The shaft, B, and pulley, A, are made to revolve at a speed of 1,800 or 2,000 revolutions per minute, the number of revolutions being shown by a counting machine indicating up to one million, but which is not shown on the sketch to avoid complication. It will be evident that this velocity, continued several minutes, will generate considerable heat, and that this heat is raised by a less number of revolutions when a bad oil is used than when an oil of superior lubricating power is used. For instance, if it requires 50 revolutions to raise 1 degree of heat in one oil, and 100 revolutions



in another, it is evident that the quality of the first will only be half as good as the second. Before starting the machine, the temperature at which the thermometer stands is noted; this, of course, will be the temperature of the room or workshop. A portion of the oil or grease to be tested is poured or smeared on the friction pulley, and the saddles, with their weighted levers, allowed to press on the drum. The machine is then started and allowed to run till the thermometer indicates a temperature of 200° Fah. When it is stopped, and the number of revolutions it has made is taken from the "counter," then the number of revolutions, divided by the number of degrees of heat that the thermometer has been raised, will show its lubricating power. After the first trial, the machine is allowed to rest twenty four hours, and then it is started again without adding any more oil, and without breaking the contact of the saddles with the drum. The number of revolutions of the drum is again taken, and divided by the number of degrees of heat raised in this second trial; and if the result is not more than from 10 to 20 per cent less than the first trial, the oil may be considered good. In very bad oils, the saddles are found to be so fast glued to the drum that the machine cannot be started a second time, and in some cases it requires considerable force to break the contact or adhesion between the drum and the brass saddles.

This apparatus is the design of Jno. Bailey & Co., of England, and is said to operate extremely well.

AT the recent exhibition of the Royal Agricultural Society, England, some of the portable farm steam engines were fitted with the electrical indicator which shows upon a dial the temperature of the water contained in the boiler.