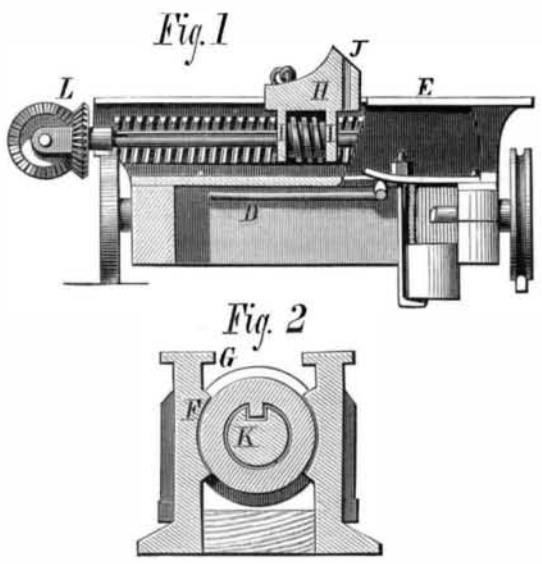
Mr. B. F. Melton, of Gainesville, Texas, has made certain improvements in the construction of Saddles, of the kind known as Spanish, so as to make them simpler, stronger, and lighter. The weight of the Spanish saddle, as it is usually made, is the principal objection to its use; and this is what the inventor seeks to correct.

Mr. J. W. Cooper, of Salem, Ind., has invented an Alcohol Lamp, for use in soldering and similar purposes. The reservoir is pivoted in a supporting frame, and is provided with two wick tubes of different sizes, which latter have independent extinguishing devices. By an ingenious contrivance the wick of the larger tube is automatically projected and lighted by the smaller flame, which is kept burning, whenever the reservoir is turned on its pivot.

IMPROVED SAW MILL HEAD BLOCK.

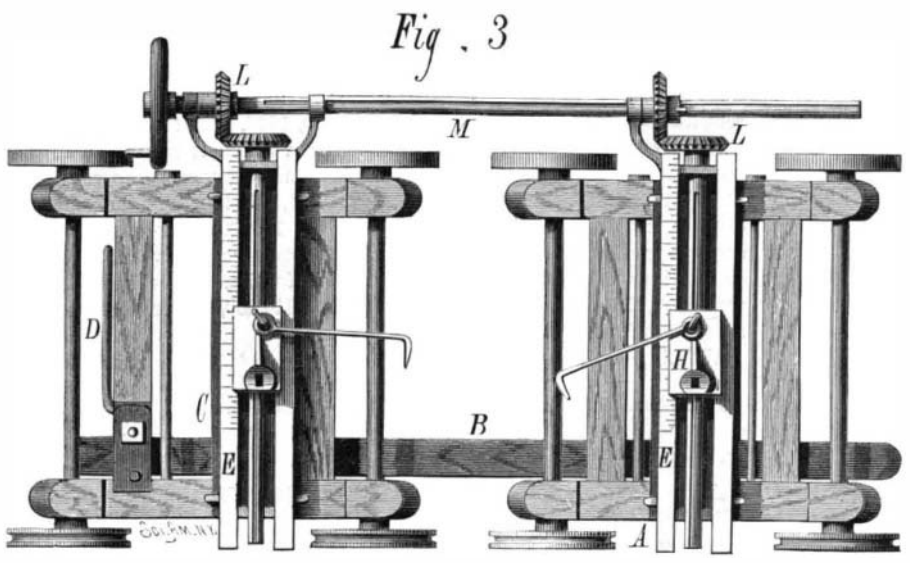
We illustrate herewith an improved head block of new construction for saw mills. It is strongly made, and possesses novel modes of adjustably fastening the carriage to the



rock rail, and of holding the log and driving the dog into it. Details of the mechanism are shown in Figs. 1 and 2, and a plan view is given in Fig. 3. A is the head frame, which, in common with the other rectangular frame, C, shown, is supported by track wheels secured to axles. It is attached to a bar, B, which has a rack upon its under side that is engaged by the usual driving pinion. The frame, C, is movable on bar, B, being notched to receive the same, and has a clamping bolt that hooks under the bar and is secured by a nut resting on a plate on the top of the frame. An eccentric lever, D, is provided, by moving which the plate is raised, bringing the head of the bolt against the bar and so clamping bar and frame together. Upon each of the frames a head block, E, shown in section in Fig. 1, is placed. This consists of two similar iron parts separated by a block at each end and secured by bolts. In the inner face of each part is formed a screw rack, F, and a rib or guide, G. This guide is received in grooves in the knee, H, which is provided with ears, I, that project downward, and a short arm, J, that is apertured to receive a stake, and beveled downward toward the saw end of the head block, to adapt it to the surface of the larger logs. The knee also carries the usual log hook.

Between the ears, I, and upon a shaft, K, Fig. 2, a tubular screw is placed, which is kept from turning by a spline in the screw and a slot in the shaft. Upon the end of the latter bevel wheels, L, are placed, which may be rotated by similar wheels on the shaft, M, so as to carry both knees forward at once at the rate of an inch for each revolution of the hand wheel. When it is desired to increase or diminish the distance between the head blocks, the cam lever, D, is raised so as to release the bar from the clamping device, when the frame, C, will remain stationary while the frame, A, is moved in either direction, as may be required, the bevel wheel imparting motion to the parts on said frame being loose on the shaft, M. The knees are made shorter than those in common use, to admit of rolling a large log upon a short head block.

Patented through the Scientific American Patent Agency, March 5, 1878. For further particulars address the inventor, Mr. James S. Scofield, Little Sioux, Harrison county, Iowa.



SCOFIELD'S SAW MILL HEAD BLOCK.

Solar Steam Power.

We recently mentioned the experiments of W. Adams, of Bombay, India, in boiling water by the heat of the sun. He has lately tried further experiments, as follows:

In the presence of several gentlemen of Bombay, 9 gallons of water were poured into a small boiler at 9:25 A.M. The rays of the sun were then directed on the boiler, and the water boiled in exactly 30 minutes. After boiling exactly one hour the focus was turned off, when it was found that 3¾ gallons had been evaporated. In the experiment described above, he used 198 glass mirrors, each 15 inches by 9½.

An Aerial Spy.

Mr. W. B. Woodbury has recently proposed an ingenious idea for taking photographs of an enemy's works from a balloon, without necessitating the presence of an aeronaut in the car. Electrical wires are run along the cable by which the air ship is held captive. Instead of a car a box is provided, inside of which another box is pivoted so that it will keep horizontal. In the inner box is the photographic apparatus, and over the lens is an ebonite shutter moved by the current, to open or shut instantaneously. There is also a sensitized tissue on rollers in rear of the lens, which is operated by clockwork, also controlled by the current. When the balloon is elevated to the required height, the lens properly focused and the tissue in position, the shutter is set in motion by the current, giving instantaneous exposure. A photograph is thus obtained, and by further controlling the clockwork fresh sensitized surface may be exposed and additional images taken.

Foreign Markets for American Goods.

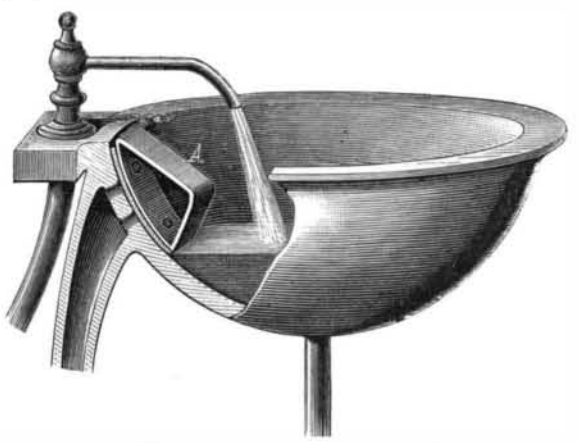
Thanks to the genius of American inventors our manufacturers are now able to compete successfully with the most skillful of other nations, not merely in our home markets, but abroad, in many lines, even at the very centers of corresponding foreign industry. But this victory of mind over muscle has been so rapidly made that our commercial classes have not had time to adjust themselves to the new conditions. Our merchants have been slow to appreciate the advantages of their position; and are but just discovering that the great markets of the world are open to them. A little prompt action now on their part would capture for American industry some of the most desirable of those markets, and give an impetus to our machinery beyond anything we have yet known.

Last summer Secretary Evarts sent to our Ministers and Consuls in various countries a circular of inquiry asking information in regard to the conditions of trade and the measures likely to promote the foreign commerce of the United States. The *Herald's* Washington correspondent has compiled from the replies to that circular a large number of interesting statements with regard to the foreign demand for American goods and the conditions which prevent our meeting such demands. The hinderances arise chiefly from our lack of shipping facilities and apparent indifference of our merchants to the special needs of the various countries we might send our goods to. Indeed the *Herald* goes so far as to say that the general impression which the reports leave on the reader is that we Americans have almost forgotten how to carry on a foreign trade. The general result of the inquiry is summed up as follows: "American manufactures are better in quality than those of any other nation, are highly appreciated almost everywhere, and are in the main as cheap or cheaper than any others. But the trade in them is pushed with but little skill and energy by our people; our exporters act carelessly and do not in such matters adapt themselves to the necessities of different countries as carefully as the English and Germans. Dealers abroad complain that descriptive circulars and price lists are not full enough. Our manufacturers do not adapt their goods to different markets as readily as do those of other countries, and communication with the United States is far slower and less certain than with Europe, even in the countries of South and Central America. But besides these general complaints there are two others which appear in almost all the reports, and which, the testimony shows, are vital. One is that our manufacturers and exporters do not maintain fixed prices, but vary them frequently, being compelled to this by the fact that we here are cursed with a currency of fluctuating value. European and South American dealers say that it is impossible for them to order American goods, even where these are greatly preferred and cheaper, because prices are thus unsettled. The other complaint lies against our high tariff, which disables us from buying and importing foreign products, and thus forces merchants abroad to trade with England, because the outward freight on their purchases is lessened by the fact that the ship is sure of a return freight to Europe."

GILBERT'S WASH BASIN VALVE.

We illustrate herewith a new valve for wash basins, by means of which the sewer pipe is claimed to be as effectually closed as the water pipe ordinarily is, and that consequently no sewer gas can escape into the room. The valve being air tight, a partial vacuum is produced above the water trap, which prevents the rush of water through waste pipes below siphoning the water out of the trap. The construction is also such that the valve cannot be left open when the water is turned off or left shut when the latter is turned on.

The valve is shown at A in our illustration, and is hinged to the rim of the basin. It is made hollow, and of such a weight that as the water rises in the basin it is raised, and the holes covered are so opened that the overflow water may



GILBERT'S WASH BASIN VALVE.

freely escape. The lower surface of the valve is covered with leather, rubber, or similar material, to cause it to cover the overflow holes tightly.

Patented through the Scientific American Patent Agency March 19, 1878. For further information, address the inventor, Mr. John S. Gilbert, 202 W. 14th street, New York city.

New Mechanical Inventions.

A new Cutting and Boring Attachment for Lathes has been patented by Mr. Mathew Rice, of Augusta, Ga. It is a hand appliance for shaping, moulding, polishing, etc., which is driven by band pulleys and held to the work by handles. The apparatus is adjustable to a variety of uses.

Mr. John Schofield, of Cheyenne, Wy. T., has patented a Flooring Clamp, consisting of a sliding presser, worked by a lever and ratchet gear, and mounted on a base plate which is securely fixed to the joist. The tool is applicable for clamping other work besides flooring.

A new Motor, invented by Mr. C. C. Gish, of Salem, Kan., consists of a heavily weighted chain wound on a chain wheel eccentrically, and operated by an engine, water wheel, or other power, the object being to utilize the weights on the chain as they descend.

In an improved Stamp Mill, invented by Mr. J. M. McFarland, of Virginia City, Nev., the essential features are the addition of auxiliary sliding tappets or weights, which are engaged by cams when the mill is run at a high velocity, thus adding to the impetus of the stroke; and the substitution of corrugated instead of plain screens, to increase their capacity for a given area.

An improved Bracket for Scaffolding, for use on shingled roofs, has been patented by Messrs. T. M. McClelland and J. A. Grant, of Mount Pleasant, Iowa. The bed plate ends in a chisel-shaped piece, which is driven under a shingle from below, and the butt of the shingle is held by a pivoted lever clamped by a screw. This gives a firm support for the scaffolding, additional brackets being used as required.

A convenient device for Lubricating Axles has been patented by Mr. L. H. Hinaman, of Long Eddy, N. Y. It is secured to the upper side of the axle, just within the collar, and by means of simple mechanism forces the oil out upon the axle arm when desired.

A Clothes Washing Machine, patented by Messrs. W. E. Armstrong and David Giesman, of Ludington, Mich., is of the class in which a reciprocating or pounding movement is employed. It has an ingenious arrangement of tubes and a rubber valve, by means of which air is forced through the clothes and water at the bottom of the machine, thus cleansing the clothes rapidly.

Mr. J. H. Herriff, of City Bluff, Mo., has patented a Car Coupling, in which the coupling link is secured in position over a retaining fin of the draw bar by means of a spring-acted hook, which is lifted by an angular lever and connecting rod when it is desired to uncouple the cars. The draw