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Improved Railway Journal Boxes Wanted.

The present method of applying oil to the axles of railway cars is to take a quantity of fibrous material like waste or rags and saturate it with the lubricating material, and stuff the space in the box underneath the axle full of this saturated material, so that it is in contact with the journal. At the back of the box there is a more or less ineffectual attempt at making a tight joint to prevent oil from leaking out and dust from getting into the box. That these attempts are ineffectual is shown by the condition of the wheels, which in most cases are covered with grease. There must be great uncertainty about the packing waste being in contact with the journal after the box has run a long distance and the contents of the box have been subjected to the consolidating effects of the jar and concussions of the road. This is, perhaps, the best practicable means of effecting this purpose; but it must be admitted that it is a very rude contrivance for doing it.

Our object in calling attention to the defects in the means employed and the methods adopted for lubricating cars is to account for the constant and almost universal annoyance from hot boxes. A record kept on one line showed that in one month there were 3,034 hot boxes. We take the foregoing from the *Railroad Gazette*. It is indicative of the great demand there is at the present time for improvements in railway journal boxes. The aggregate length of American railway lines is now about eighty thousand miles. The consumption of oil, grease, and waste for lubricating car wheels is enormous; and the delays, accidents, and damages from hot boxes very great. It does seem as if some ingenious mind could invent a simple improvement that would obviate all these evils. On this head our cotemporary makes the following suggestions:

"The lubrication of railroad cars is a much more complicated subject than at first sight appears. Not only is it a question of the quality of the lubricants used, which is of itself still involved in much darkness, and the secrets of which will perhaps not be revealed excepting to the earnest interrogations of mechanical, chemical, and microscopic science, but there are questions of material and proportions of the journal and journal bearing, and construction of the oil-box itself. Let any one talk with a manufacturer of journal bearings for cars, and he will learn that there is very great diversity of opinion with reference to the material and methods of manufacture of such bearings. Brass compounded in various ways, phosphor-bronze, Babbitt metal, lead, etc., all have their advocates. The manufacturer will tell you that, if railroad companies were only willing to pay a fair price for good bearings, there would be very much less difficulty with lubrication. Now, undoubtedly the material which forms the bearing is a very important element, but it is obvious that, as the journal rubs against the bearing, the quality of the former is just as important a factor in the question of friction as that of the bearing is.

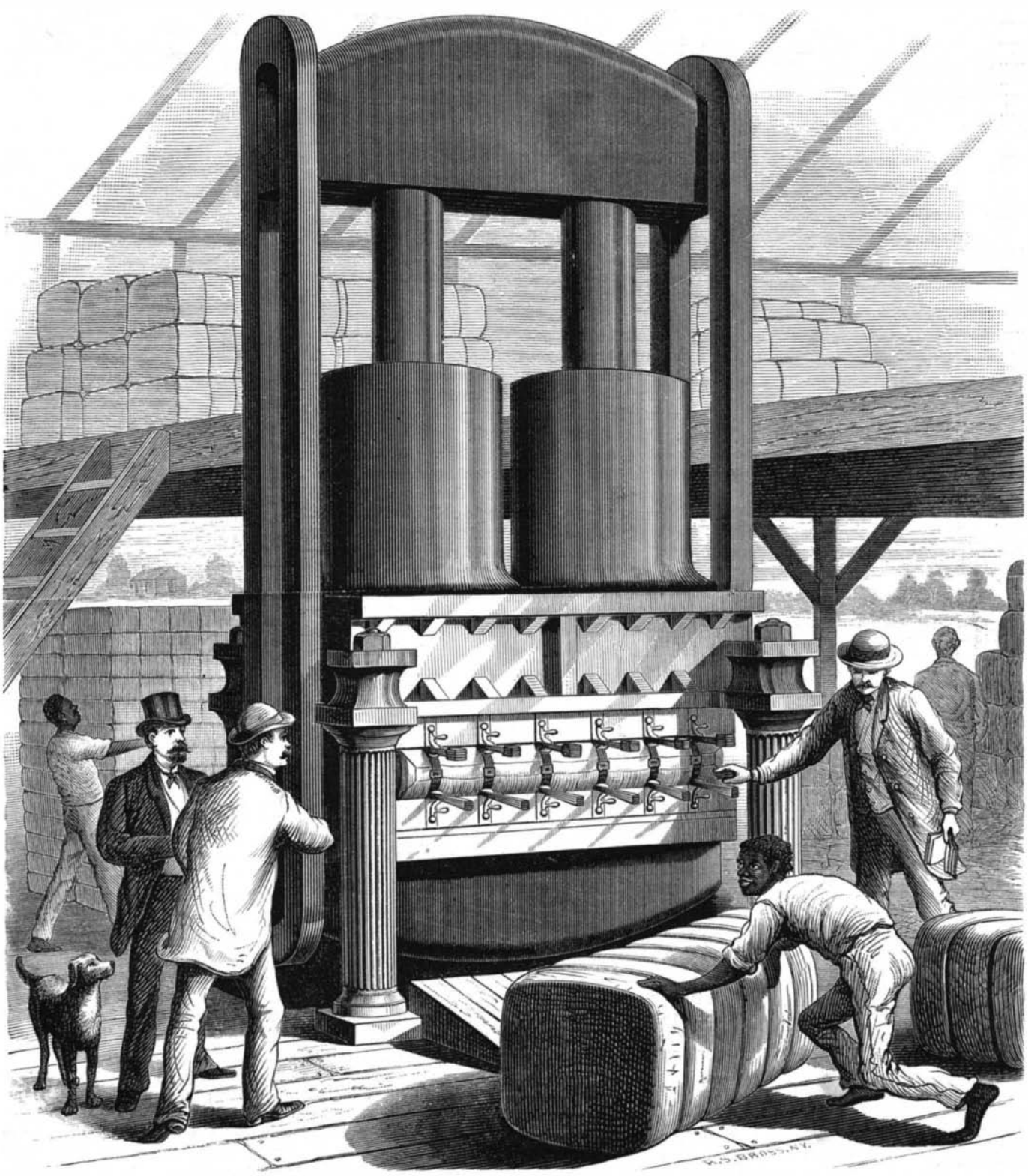
IMPROVED METHOD OF COMPRESSING COTTON.

Since the close of the late civil war, much attention has been given to the problem of putting the cotton crop of America into such shape as to give vessels and rail lines the greatest possible revenue from its carriage.

To a great extent this has been brought about by the fact that since the above period railroads have been active competitors for this business. Prior to the war no cotton was carried by rail from the South direct to spinners, Northern markets, or for export; while to-day it forms a very important element in the business of our great trunk lines. Not only is cotton now carried overland direct to our American mills, but in all important centers bills of lading are given by the rail lines to all points in Europe, and the exchange is sold against these bills to local banks at these points. Memphis, Nashville, St. Louis, Montgomery, Selma, and other cities afford buyers and shippers export facilities to-day equal to New Orleans or Savannah. For the crop year just closing it is no exaggeration to say that the trunk lines of the North have carried 1,000,000 bales. This revolution has been brought about by the compress.

In 1865, a car load of compressed cotton consisted of 30 to 35 bales. To-day, from 40 to 45 bales, weighing 20,000 lbs. is the standard. Low rates and the most rigid economy are now compelling an advance in the last named tonnage. Cars capable of carrying 25,000 to 30,000 lbs. are replacing the old standard of 20,000 lbs. Improved road beds and bridges are making these loads safe and economical to move. And now the rail lines are demanding heavier loads.

The object of the invention herewith illustrated is to accomplish this point. Band stretchers, pulleys and tighteners, and devices of such nature usually require special fastenings, thus compelling the compress to throw out the buckles that come on the cotton and substitute others adapted to the tightening mechanism. This is expensive. The use of the stretcher involves considerable loss of time and may reduce the work of the compress from 70 to 35 bales an hour.



BURR'S IMPROVED METHOD OF COMPRESSING COTTON.—Fig. 1.

Mr. Burr's method, it is claimed, allows the employment of any fastening in use, and, instead of reducing the capacity of the compress, increases it. The bed or saddle of the press and, B, the follower or bottom block, to which the platens are attached, are shown in Fig. 1. These platens have fixed ribs, A, Figs. 2 and 3, running transversely across their faces. At B are blocks placed in the spaces between the ribs and having a thickness equal to the height of the ribs and a length equal to the width of the bed. These blocks are provided with two or more guide rods, C, that pass through the plates, D, and are secured by the check nuts, as shown. These nuts, besides acting as guides, regulate the height to which the blocks, B, rise. Recesses are formed in the blocks, B, to receive springs of rubber, E. These springs surround the guide rods, and bear the blocks upward with such force that their combined action is more than sufficient to hold up the superimposed bale. Twenty to thirty bands cut to proper length are fastened by twine into a snug bundle and the buckles fastened on the ends, as shown in Fig. 4. These bundles are laid up-

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IMPROVED FARM LOCOMOTIVES AND STEAM ROAD ROLLERS.

Messrs. Aveling & Porter's well known road and farm locomotives and their steam road rollers have had a new duty and are now adapted for use in connection with the Blake Crusher Company, of New Haven, to their stone and ore crusher. The crusher is mounted on strong wheels, as illustrated, and, by the aid of the Aveling locomotive or their steam roller, can easily be removed from quarry to quarry or to any place where it may be found more convenient or cheaper to take the crusher to the material than to move the material to the stationary crusher. As either of the engines can likewise be used for hauling or consolidating the broken stone, or driving the crusher, the convenience and economy of this arrangement will be manifest.

Messrs. Aveling & Porter, we are informed, have built upward of 1,300 road and farm locomotives; and their extensive manufactory at Rochester, England, has, during the last two years, been doubled in capacity. By reason of the varied duties to which the Aveling traction engine can be applied, including hauling, plowing up prairie land, thrashing, and general farm work, the demand has very greatly increased, and from six to eight engines leave Messrs. Aveling & Porter's works every week throughout the year.

The road locomotive is largely employed instead of the ordinary portable engine for farm and other work; it is extensively used in Great Britain for plowing and hauling farm produce, and heavy material on ordinary roads, and its reliability and great economy, when taking the place of animals for such work, have built up for the manufacturers a prosperous and growing business in England.

The engines are built of great strength and comparative lightness. Their ability to ascend steep grades with heavy loads, their handiness, security against damage when traveling even on rough roads, are leading results obtained.

As an illustration of the value of these locomotives for hauling purposes, the following estimate of the daily expense, we are informed, may be taken as approximately correct, altering cost of labor and fuel for different localities:

Size of engine, say, 16 horse power; journey 12 miles out, loaded, returning empty; grade of road varying, say, from 1 in 25 to 1 in 10; load (without wagons) 12 tons.

Wages, engineer, $2.50; assistant, with wagons, $1.75; coal, half a ton, $2.50; oil and waste, $0.50; interest and wear and tear, say 15 per cent, $2; water, say, $1.25. $10.50, total cost of hauling 12 tons of material 12 miles, or about 7 cents per ton per mile.

One man only is required for the entire management of the engine, and the total cost of running one of these locomotives, of sufficient size to haul and drive the largest thrashers, does not exceed $4.50 per day, including wages, fuel, and oil. Such an engine would easily convey loads of 10 tons of material on ordinary roads and ordinary grades.

The steam road roller of Messrs. Aveling & Porter costs about the same sum for running expenses, and the results of constructing and maintaining roadways, by the aid of this machine, are, it is claimed, that a saving of from 50 to 65 per cent in material and wear and tear is effected.

At the Philadelphia Exhibition, in 1876, the only prize awarded for steam road rollers was given to Messrs. Aveling & Porter. Both during and after the Exposition the locomotives were employed by the British and Canadian Commissioners in removing from place to place large quantities of heavy machinery and material.

Mr. W. C. Oastler, 43 Exchange Place, New York city, is Messrs. Aveling & Porter's representative in America.

MOTE FROM THE EYE.—Take a horsehair and double it, leaving a loop. If the mote can be seen, lay the loop over it, close the eye, and the mote will come out as the hair is withdrawn. If it cannot be seen, raise the lid of the eye as far as possible, and place the loop in it as far as you can, close the eye and roll the ball a few times, then draw out the hair. The substance which caused so much pain will be sure to come with it.

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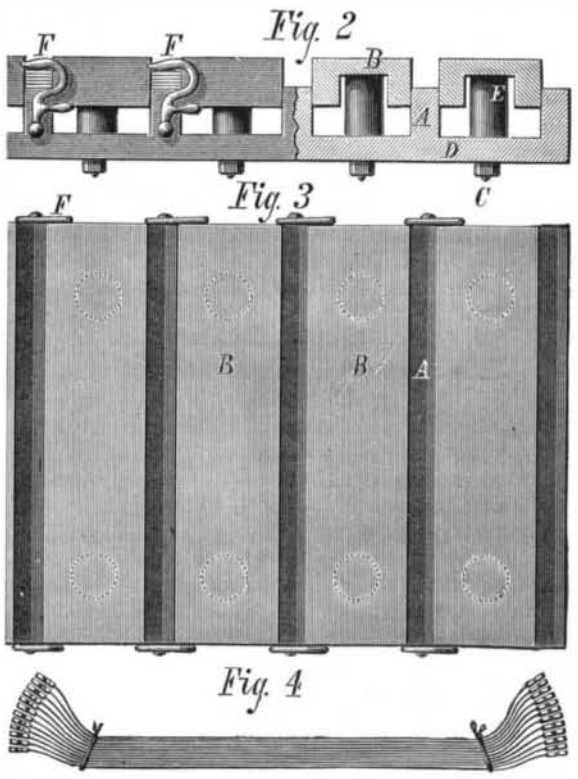
on the ribs, A, and held in place by the spring hooks, F, Fig. 2. It will be seen that, as the uncompressed bale lies upon the blocks, B, it may be moved about without

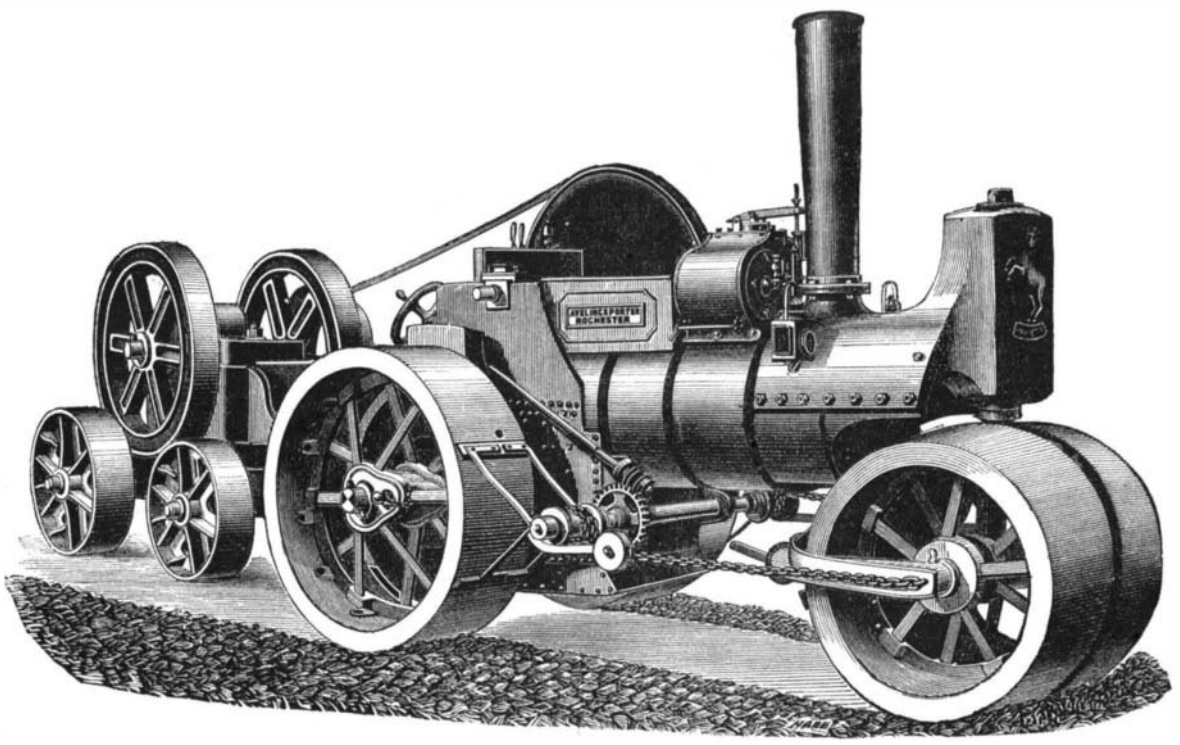


disturbing the band which lies between them. The operation of the machine is as follows: A bundle of the bands, as shown in Fig. 4, is placed on each of the ribs and between the movable blocks, which prevent them from moving laterally. They are held on to the face of the ribs by the hooks, F. A bale of cotton is now put into the press, where it is supported by the movable blocks.

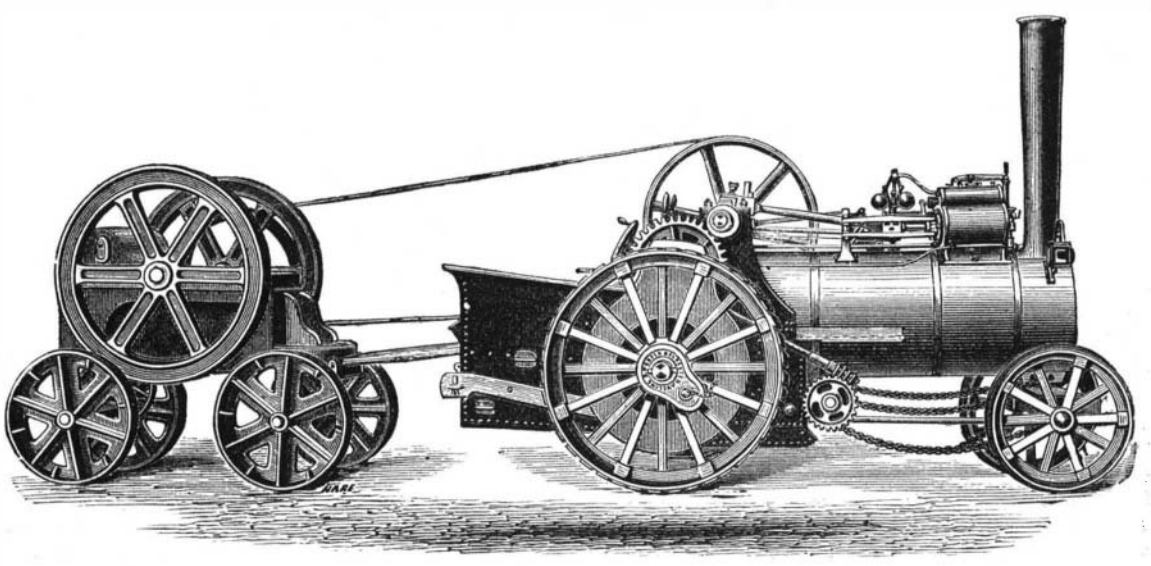
After the bale is adjusted to the required position (the movable blocks holding it up and preventing any disturbance of the bands), the press moves up until it is fully compressed. As soon as the pressure is applied the movable blocks yield until they rest on the plate, D, leaving the bands not only in contact with the bale, but, in the case of full bundles, forced into the cotton from an inch to an inch and a half.

The bands are now fastened, the press lowered, the bale removed, and the operation is repeated. The supply of bands is renewed from time to time as they become exhausted. We are informed that 30 bands has been found not to be too many to put in each bundle. Thus the time consumed in reefing or passing the single band through the press is saved. This results in a marked increase of the amount of work done by the press.

Again, the absolute contact obtained by this method renders impossible poor or shiftless work by a careless tier. These platens are in successful use on the presses of the Union Cotton Compress Association of Memphis. Patents were issued to John T. Burr, dated September 15, 1874, and January 23, 1877, through the Scientific American Patent Agency. Further information may be had by address A. E. & J. T. Burr, either Memphis or Nashville, Tenn.



AVELING & PORTER'S STEAM ROAD ROLLER AND BLAKE'S CRUSHER.



AVELING & PORTER'S ROAD & FARM LOCOMOTIVE AND BLAKE'S CRUSHER.

The Coming Great Famine in Madras.

A calamity greater, says the *Saturday Review*, than any that has yet occurred in India during British rule, is now threatening the Presidency of Madras. The famine of this year, which the Government is at present fighting to the extent of its resources, is to be succeeded by another due to the failure of the rains of the Southwest Monsoon, which will continue over another year and which will inflict with double rigor a people already weakened by past suffering. It is reported that even during the present famine more people have been found dead in Madras in one morning than died during the whole of the Bengal famine, and it is asserted that more than half a million of inhabitants have already succumbed.

The difficulties of the situation are increased by the lack of means of inter-communication. There are very few railways, and most of the grain is taken into the interior by bullock carts. But there is no food for the animals any more than there is for man, so that practically there is no way of carrying relief into the distressed districts.

It will be seen that in this case eight portable and cheap field railways will be of great utility. There is no fear of scarcity of grain provided money be obtained to buy it and means of transportation suitable for the purpose be at hand. The funds are already being raised by appeals to the charitable in England, and to inventors and manufacturers the world looks for the necessary railways or other modes of carriage. It has been proposed that men be used for traction purposes on these roads instead of bullocks, six men being estimated equal to one brute. It is hardly necessary to add that the cheapness of the system proposed will be an important consideration, as the routes will probably be both long and numerous.

Dipping Acid for Brass.

A dipping acid for brass is made by mixing together nitric acid, sulphuric acid, and muriate of ammonia, or sal ammoniac. There is no certain rule by which to mix the acids. The bath is composed mostly of nitric acid, the sulphuric acid and the muriate of ammonia being present in inferior quantities. The mixture must be so strong that a momentary immersion will be sufficient to make the work bright and clear. To remove the acid, wash in hot water; and to dry the work, imbed it in fine hot sawdust. Heating the work before dipping will remove the oil or grease, which must be removed, or the acid will not act effectually or satisfactorily.

THE BEST OILSTONE FOR SMALL DRILLS, ETC.—An Arkansa or Wachitas stone, which can be procured of almost any hardware dealer, is the best for sharpening small cutters and drills. Use plenty of sperm oil on the stone, and keep it enclosed in a tight box or case made to secure it. Clean the surface of the stone occasionally with kerosene.

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