

**IMPROVED SELF-OILING AXLE BOX.**

We illustrate herewith a new self-oiling axle box for railroad cars, which is claimed to prevent overflow of the oil, to exclude all dust and dirt, to insure thorough lubrication, and to necessitate the use of a remarkably small amount of lubricant in proportion to the distance run. The inventor submits a report of a competitive trial of the device on the Bombay, Baroda, and Central India Railway, from which it appears that a box was filled with 3 pints of oil and not opened or in any way disturbed for a period of four months. During this time, the car ran 35,498 miles. On opening the box, about 2½ pints of oil were found to still remain and to be quite free from grit of any kind.

The construction of the invention will be understood from the two sectional views given herewith. The new features consist, first, in the improved iron keep, A, which is fitted to the axle box so as to secure the brass bearing, B, in its proper place, and at the same time to admit of the easy removal of the latter when desired. It will be observed from Fig. 2 that the brass bearing forms a kind of dovetail joint with the keep. This arrangement is calculated to save much of the superfluous metal now used only for holding the brasses, and which cannot in any way be brought into contact as surface bearing.

Another improvement lies in the stuffing boxes. These are found at C, Fig. 2, one on each side of the brass bearing. They are cast in the top part of the axle box. No cushion plate or other appliance is necessary for the purpose of supporting or keeping the pads in position. Each receives a pad of felt extending the whole length of the journal, and which, by capillary action, becomes supplied with oil from the surface of the axle. The lubricating box, D, is situated in the oil reservoir of the axle box, and is partitioned therefrom by plates of metal, in which apertures are made, as shown in Fig. 1. This box is also filled with felt, which is kept pressed against the axle by the spring and plate, E.

In order to prevent overflow, the contrivance of the wooden washer, in connection with a center tongue of iron cast in the groove in which it is fitted, as shown at F, Fig. 1, is used. This center tongue projects higher than the outer flanges, so that it, on one hand, prevents rain drift from entering the boxes, and the consequent overflow of oil; and on the other, it prevents escape of oil from within. It also serves to exclude dust and grit. The two parts of the wooden washer are caused to fit closely on the axle by means of a small steel camber spring (not shown), fixed to the outer edge of each half of the washer, which forces the parts together. There is a slight clearance at the lap joint for wear of the washer; as the latter becomes gradually worn by the axle, this clearance is closed up by the springs.

For further particulars, address Mr. J. B. Tomlinson, care of C. L. Kelly, 80 and 82 White street, New York city, or Wm. Knifton, Black Hawk, Gilpin county, Col.

**USEFUL KIT OF SCREW-CUTTING TOOLS.**

We illustrate herewith a set of screw-cutting implements, neatly encased, which is designed more particularly for carriage makers or other mechanics who frequently have crooked work to cut. There are five taps, a similar number of dies and wrenches, a die plate, and also a holder whereby the dies may be held in a bit stock.

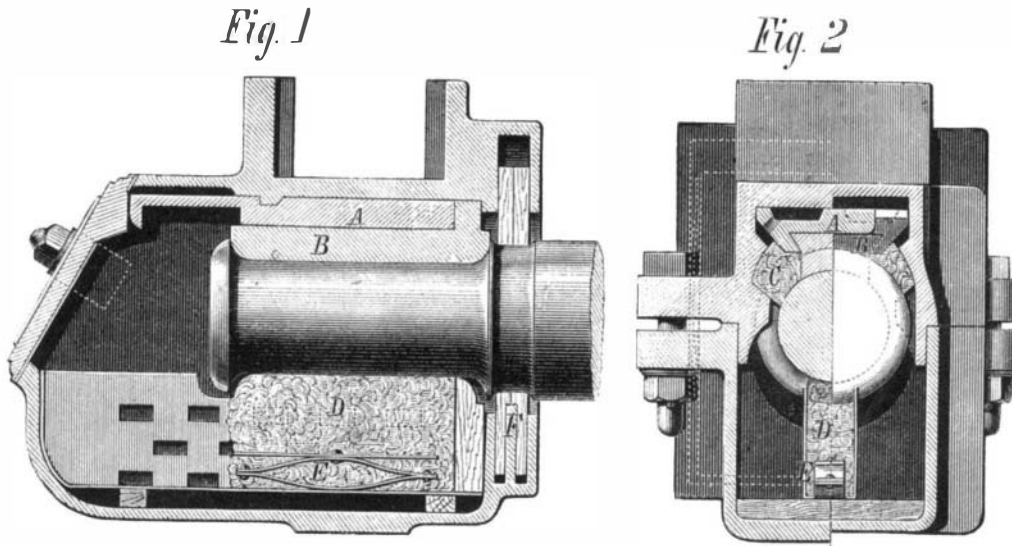
The dies and taps, we have illustrated some time ago under the name of the "Lightning Screw Plate;" but latterly the construction of the dies has been materially improved by the addition of a guide to each, which insures the straight presentation to the teeth of the object to be threaded. Any mechanic who has attempted to fit together untrue screws and nuts is conversant with the difficulties encountered, and hence will appreciate the advantages of the above simple improvement. The guide serves also another useful purpose, as a holder for the two parts of the die, which formerly were inclosed in a collet. The latter is now done away with, and the die is fastened to the guide by a square-headed screw (which serves as a hinge) and a wedge-headed screw, by moving the latter of which, the parts may be adjusted so as to compensate for wear. In this way, the dies keep the exact size of the tap, and the nuts and bolts always correspond without trying or fitting. The threads are perfectly finished at a single cut. A worn-out die is readily removed from the guide, and the latter lasts indefinitely.

In the side of the guide, as shown in the illustration, there are a couple of notches. These receive lugs made on the inside of the screw plate, and are thereby prevented from turn-

ing. The dies are firmly held in the plate by the clamp screw shown.

In a suitable receptacle on the right of the tool case will be seen a device for holding the die, which may be inserted in the ordinary bit stock. The die is simply dropped into the open end and clamped by a single screw, as in the plate already described. The wrenches, which are shown in the front part of the box, are disks of metal having recesses to fit nuts of different sizes, either square or hexagonal. Being in shape similar to the dies, they are readily inserted and secured in the holder above noted, so that the power can be applied by the brace. The tap is of course secured in a vise.

The whole kit is one which will meet with favor from workmen generally. The tools, thus neatly put up, are

**TOMLINSON'S SELF-OILING AXLE BOX.**

manufactured by the Wiley & Russell Manufacturing Company, Greenfield, Mass., and may be obtained from Messrs. Frasse & Co., 62 Chatham street, New York city.

**Corrosion of Sheet Zinc, etc.**

Herr Frischen, Inspector of Telegraphs, states, in a communication to the Berlin Polytechnic Society, that the destruction of sheet zinc may often be referred to iron nails employed with it, and also to particles of charcoal falling on to it in the neighborhood of chimneys, owing to the galvanic action developed. For the same reason copper tubes soldered with zinc require renewal of the joints every few years, and gas and water pipes become leaky on account of the lead employed in joining them. Copper strips used as lightning conductors, fastened with iron nails, corrode rapidly; and the ends of lightning rods embedded in charcoal, as generally recommended, are rapidly destroyed in the same way. In the combination of cast and wrought iron in a system of pipes, a decided current of electricity can be detected, indi-

bonds, which are cut and canceled thoroughly, and the fractional currency are emptied into the macerating cylinder, which is also locked with three separate locks, the keys of which are held respectively by the officers named above. The process of macerating is very simple. The macerating cylinder is revolved by a sixty horse power engine, and at the same time jets of steam are injected into it, which speedily soften the mass of paper. The moistened paper by its own gravity keeps dropping, and is reduced to a pulp by the sharp ridges which form the inside of the cylinder. After being subjected to this treatment for about thirty-six hours the cylinder is unlocked by the three officials and the pulp is then allowed to fall on an elevator, which conveys it to a large tub, where it is thoroughly cleansed, and all fatty matter removed by the agency of quicklime and soda.

The washing of the pulp completes the process, and it is finally dumped in a heap to lie until purchased. Recently about \$4,500,000 worth of fractional currency was placed in the macerater. This was an unusually large batch, the average "burnings," as the macerations are called, being much less. There is now an immense quantity of the pulp on hand, probably several hundred tons. This will be sold to paper manufacturers. The rate usually paid for the pulp is in the vicinity of \$5 per ton, and the principal purchaser manufactures from it a very nice article of paper. An approximate estimate of the quantity of pulp annually made out of the fractional currency or bonds at this establishment is 650 tons. The proceeds resulting from the sale of this may be counted as a net gain over the old method, as the burning of the money or bonds required the expenditure of as much labor as does the present macerating system, and consumed a great deal more coal.

The National Bank notes are converted into pulp by the centrifugal process inside the Treasury building, the method adopted being almost in every respect similar to that pursued with the fractional currency and bonds, as described above. The improvement on the burning plan is too obvious to need extended mention. Extraordinary precautions were required to keep the destroyed money from flying out of the furnace chimney, and the odor of the burned money was an intolerable nuisance, and was very injurious to the health of those residing in the neighborhood of the place where it was carried on. This last reason would have been a sufficient one for changing the method, if the additional one of making an absolute saving to the Government did not suggest itself.

LEATHER belts when new are not quite of the heaviness of water—say about 60 lbs. per cubic foot; but after having been for some time in use, they become thinner and denser by compression, and are then about as heavy as water. The weight of single belting may be approximately estimated at 0.068 lbs. per foot length and inch breadth.—Rankine.

**THE WILEY & RUSSELL COMPANY'S SCREW-CUTTING TOOLS.**

catating that more attention should be paid to this fact in laying them. It has also been noticed that zinc corrodes readily in contact with lime.

**Tomatoes Preserved in Water.**

Choose fine ripe tomatoes free from spots or bruises, says M. Bazin in *Les Mondes*, wipe them carefully with flannel and place them in a large-mouthed vase, until the vessel is full to within an inch and a half of the top. Pour on clear filtered water until the tomatoes are just covered, and then paste a sheet of paper over the mouth of the jar. It is absolutely necessary that the tomatoes be free from any spot or bruise whatever, and care must be taken to remove from the water any which in course of time show signs of injury.