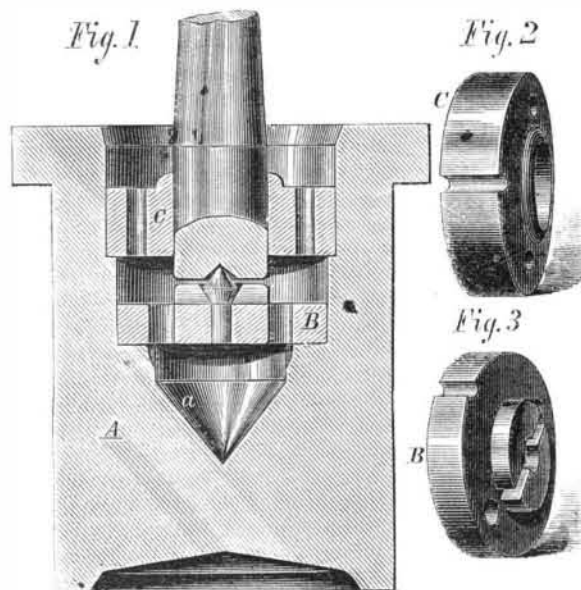


MILL STEP.

This invention furnishes a step for millstone spindles, or any vertical shaft running at a high rate of speed, which prevents the heating of the parts coming in frictional contact and protects them from cutting and wearing rough. Fig. 1 shows, partly in perspective and partly in section, the arrangement of the parts.

A is the box, which incloses and supports the other portions, and which is provided with the chamber, *a*. B (shown in perspective in Fig. 3) is the plate upon which the spindle or shaft rests; and C (shown in perspective in Fig. 2) is a ring encompassing the shaft. The plate, B, and the ring, C, will be observed to have holes through them, and they are each provided, as seen in Figs. 2 and 3, with a groove at the side by means of which they are keyed in position in the box. The plate, B, is grooved across its upper face. The spindle is steadied by a loose pin resting in a central hole through the step plate, as shown in Fig. 1. In operation, the oil used runs down through the holes in the ring and plate and fills the groove across the face of the latter, by which means the bearing is kept well lubricated and free from the action of



grit or dust, etc., all such substances passing through the holes into the chamber, *a*.

The invention was patented May 2, 1871. For further information address the inventor, Mr. Lewis Marsh, P. O. Box 1,579, Minneapolis, Minn.

Bone Setting.

Bone setting is not the art of resetting broken bones or dislocated joints; bone setters are not surgeons, or regular practitioners in any sense of the title; and their patients, even when they have suffered injury to joint or bone, have been pronounced by the regular practitioner cured before seeking the help of the bone setter.

"A healthy man sustains a fracture of one or both bones of the fore arm, and applies at a hospital, where splints are adapted in the usual way. He is made an out patient, and the splints are occasionally taken off and replaced. After the lapse of a certain number of weeks, the fracture becomes firmly united, the splints are laid aside and the man is discharged as cured. He is still unable to use either his hand or his fore arm, but is assured his difficulty arises only from the stiffness incidental to long rest of them, and that it will soon disappear. Instead of disappearing, however, it rather increases, and in due time he seeks the aid of a bone setter.

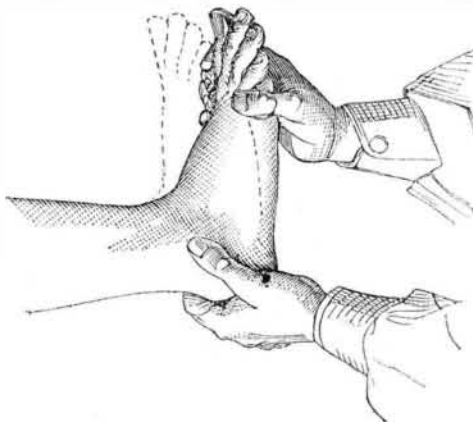
The answer of the irregular practitioner, that is, the bone setter, is precisely the opposite, namely, that freedom can only be restored to the stiffened joint by movement, by manipulation, and manipulation too of the most formidable kind, nothing less than suddenly and forcibly rupturing and tearing asunder the adhesions formed between the articulating surfaces of the affected joint, an operation which is so frequently successful that it forms the very basis of the bone setting craft.

It is here that the bone setter steps in front of the scientific surgeon, and we must confess to a feeling of disappointment that their relative relations are not reversed, that the surgeon is not called in to rectify the malpractices of the quack instead of the latter being sought out to complete the shortcomings of the former. Let us see how this manipulation is performed. The bone setter has a clearly defined system of treatment for each separate joint, if not for each specific affection to which each joint is subject. One example may here be given:

"The proximal side of the affected joint being firmly held, and the thumb pressure made in the ordinary way, the tarsus is so grasped as to give the greatest attainable leverage, the foot twisted a little inwards or outwards, then sharply bent up upon the leg and again straightened. As a rule, it is desirable to execute this manoeuvre twice over with an inward and once with an outward twist, and also to take care that the movements of the joint are free in all directions."

Bone setters, we are told, are for the most part uneducated men, wholly ignorant of anatomy and pathology; but we are not told what we greatly wish to know, and that is, the manner and method in which the secrets, the mysteries, and the traditions of their craft, are communicated to each other. No doubt there exists a freemasonry in the craft, so that when individual members meet revelations are made and notes compared, but we are not informed of any regular or

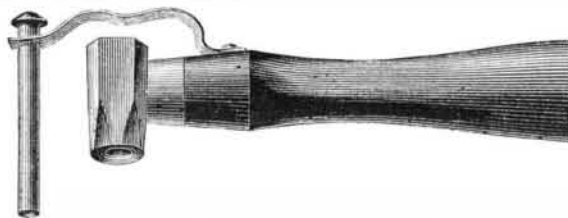
organized system of instruction, either for the maintenance and extension of the craft, as a craft, or for the enlightenment of the separate and detached members of the fraternity. The most celebrated, we may even say distinguished,



bone setter of our day was the late Mr. Hutton, whose successful treatment of cases that had baffled the skill of the foremost surgeons now living (cases related in detail by Dr. Hood, and about the accuracy of which there can be no question or doubt) is little short of marvellous; and the question is ever recurrent while we read: "How and where was this skill acquired?" for a bone setter of Mr. Hutton's caliber could put his finger on the spot where lurked the seat of an affection that had crippled a patient for half a dozen years, and had defied the scientific treatment of the ablest surgeons of our time; nay, he could point to this spot without ever seeing the limb affected, guided merely by observing the attitude, gait, or action of the patient. Now, whence comes this undoubted skill of these illiterate men? It appears to be obtained solely by observation of symptoms and results of treatment, the accumulated knowledge of from day to day experience; and as we often see that one sense is quickened and functional power increased by the loss or impairment of some other sense, so perhaps the narrowing of the field of instruction, the limiting of the sources of information, may have intensified the powers of observation of the bone setters, atoning in a measure for the absence of the revelations of science.—*Nature*.

RIVETING DEVICE.

The annexed engraving represents a new tool for fastening copper rivets in leather, which appears to possess some merit. It will be seen from the cut to consist of a handle carrying a head somewhat resembling a hammer, and a punch or plunger attached to it, for security's sake, by a strap. The head has a cylindrical hole through it, the margin of which, at the lower side, is made slightly concave. The punch or plunger fits the hole in the head loosely.

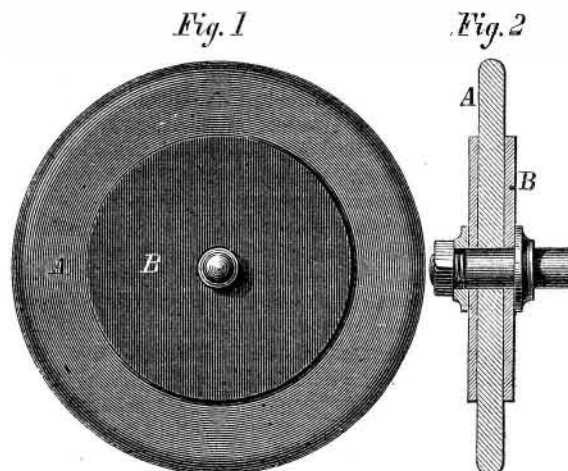


In using the tool, the rivet is put through the leather and the washer placed upon it; the head of the rivet is then laid upon some hard substance, and the lower side of the tool head placed upon the washer, in which position the end of the rivet enters the cylindrical hole. A blow upon the upper side of the tool head drives the washer down snugly upon the leather and draws the rivet head flat. The punch or plunger is then inserted in the hole, and a blow upon the upper end heads down the rivet evenly and smoothly.

Patented through the Scientific American Patent Agency, for the inventor, Mr. Thomas J. Allison, of Turnersburg, North Carolina, of whom further information may be obtained.

STRENGTHENING EMERY WHEELS.

The improvement illustrated in our engraving relates to



the construction of emery wheels which are used for the grinding and polishing of metals. It consists in the application of disks of rubber, leather, or other elastic or flexible material, to one or both sides of the emery wheel. Fig. 1 is

a side view of the wheel, and Fig. 2 a vertical cross section of the same.

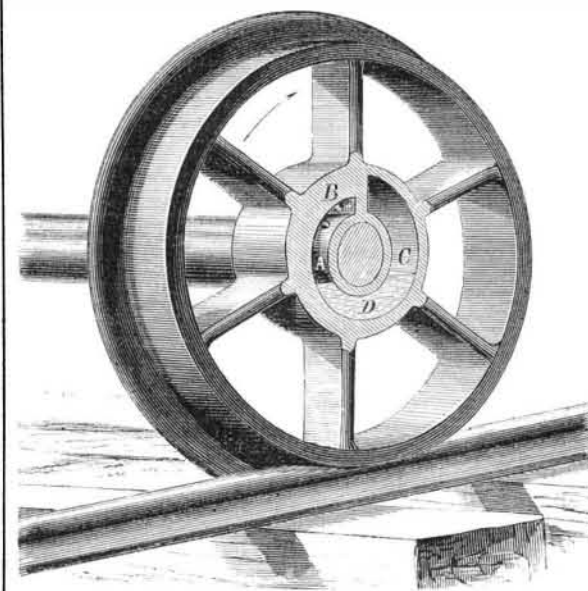
A is the emery wheel, and B is the disk of suitable material, which is made to adhere to the wheel by means of glue or other cement.

Thin emery wheels are in great danger of bursting if run at high speed, and, though very useful in the mechanic arts, are not used as often as they would be, or are run at low speed, on account of the risk attending them. The application of these disks strengthens the wheel and prevents its bursting when revolving at a high rate of speed.

Patented through the Scientific American Patent Agency, May 14, 1872, by Walter S. Jarboe. Further information may be obtained by addressing Union Stone Company, 29 Kilby street, Boston, Mass., or 93 Liberty street, New York.

PEART'S PATENT PIT CAR WHEEL.

Annexed we give a representation of this wheel, with the hub in section so as to show its interior arrangement. The object of the invention is to perfect the lubrication of the working parts. C is the oil reservoir, and D the oil placed in it. A is the hole to convey the oil to the shaft. B is a



spurt hole from one side of the reservoir to the other. On starting the revolution, the oil reaches the journal in sufficient quantity for lubrication, and the supply is stopped by the centrifugal force developed by the wheel when fully under way. The spurt hole, B, relieves the surplus oil on either side by allowing it to pass through. The wheel can also be used as a loose pulley; in which case the direction is as shown by the arrow, and the spurt hole, B, is closed. The advantages claimed are that thin oil can be used and no more of it consumed than absolutely needed; that it requires attention but once a month, and costs no more than other wheels.

Further information may be had of the Atlas Works, Thos. N. Miller, President, Pittsburgh, Pa., who states that the wheel is already used in forty coal mines.

DISCHARGING COAL.

A party of invited guests were recently united to witness the discharge of the barge *Dunderberg*, belonging to the American Coal Barge Company, at the yard of S. Tuttle, Son & Co., Brooklyn, N. Y.

The patent carrying vessels and method of discharge adopted by this company are novel, and greatly improve on the old system. The coal barges, which are 175 feet long, with a carrying capacity of 1,000 tons, are divided into compartments called pockets. Every pair of pockets is provided with a well hole, over which is placed an improved elevator, so arranged that the coal is automatically fed from the pockets and carried rapidly by the elevator to a chute which in turn conveys it into a building on the wharf. This building, also called a pocket, is raised on posts sufficiently to admit the passage under it of a train of cars or other vehicles, which are loaded from above with great rapidity and convenience.

The old barges, which are about 200 tons burden, are unloaded by means of buckets and an ordinary derrick, and are unable to discharge more than 25 tons an hour. The company's barges carry five times this burden, and are discharged by their patent elevator at the rate of from 200 to 250 tons per hour.

STEAM PROPULSION ON CANALS.

A correspondent, "Tennessee," takes exception to that portion of "Pro Bono's" letter on this subject, published on page 260 of the current volume of the SCIENTIFIC AMERICAN, wherein he stated that "no plan has yet been submitted which is capable of superseding the old system in point of economy." "Tennessee" quotes from the report of Mr. Green, who was engineer to the State Commission, to show the feasibility of carrying on canal navigation by steam with an economy which was altogether foreign to the old system; and he takes the ground that boats have already been designed by skillful inventors which are well calculated to answer all the conditions necessary to the attainment of that end.

THE evergreens at the Central Park, New York, such as the Norway spruce, hemlock, juniper and *arbor vitae* were badly affected by the severe cold of the past winter. Hundreds of them were killed.