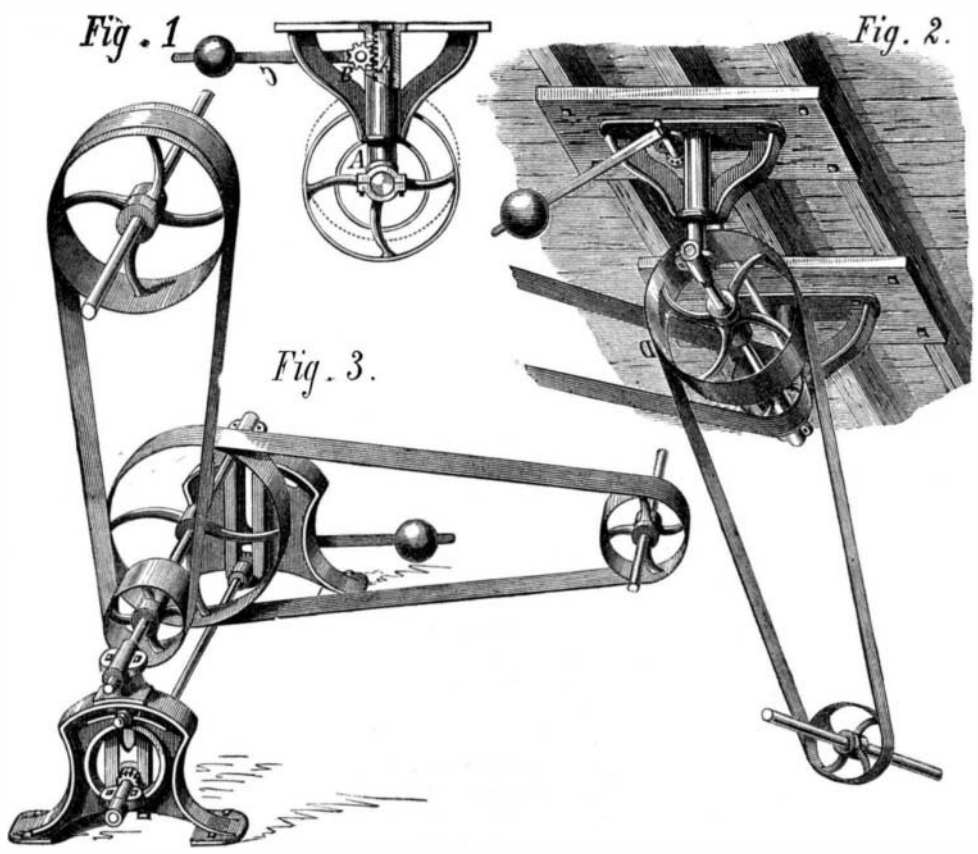
COMBINED BELT TIGHTENER AND COUNTERSHAFT HANGER.

The annexed engravings represent a device for the transmission of motion in a prompt and uniform manner, and with safety. The invention also obviates the use of loose pulleys and the consequent changing of belts.

The construction will be understood from the sectional view, Fig. 1, which shows a countershaft supported in a bearing upon a standard, A, which slides in guides. Engaging with rack teeth upon said standard is a pinion, B, with which is connected the weighted lever, C. The effect of this arrangement is to raise the countershaft, the standards, A, entering the ways as far as possible; but when the lever is elevated, the countershaft will be moved down, and the belt pulley will take the position indicated by the dotted lines in Fig. 1. It will be obvious from Fig. 2 that a belt, passing over the pulley, D, may be slacked or tightened at pleasure through the means above described. When the belt is held taut by the weighted lever, keeping the countershaft raised, then necessarily motion will be transmitted; but as soon as the countershaft is caused to descend, then the belt will hang loosely, revolving with the pulley, D, but not with the driven pulley. In the opposite case, represented in Fig. 3, the raising of the countershaft, which is under the driven pulley, determines the slacking of the belt; and the latter remains stationary upon said driven pulley, and hangs loose from the driver. The belt in all cases remains in place relatively upon the pulley. As indicated in Fig. 3, the standards which support the countershaft are made radially adjustable so as to be placed in proper line of direction between the driving and driven pulleys. The counterposed lever may be governed by a cord and pulley or any suitable device. The abolition of loose pulleys is an advantage of importance, since the dangers peculiar to such machinery, as well as the difficulty always encountered in oiling the same, are well known. By the present device, the power hitherto used in turning a loose pulley is economized, as well as the wear incident thereto.

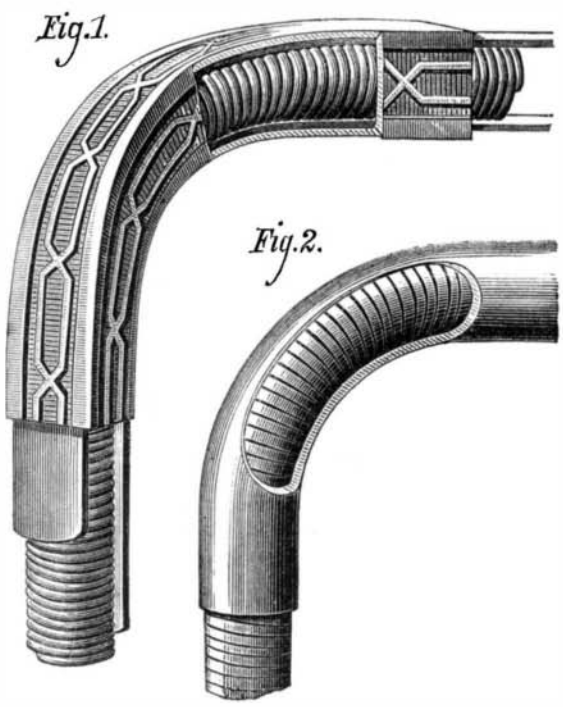
Patented May 4, 1875. For further information address the inventor, Mr. John J. Squire, or Branch, Crookes & Co., 114 and 116 Vine street, St. Louis, Mo.



SQUIRE'S COMBINED BELT TIGHTENER AND COUNTERSHAFT HANGER.

NEW METHOD OF BENDING PIPES.

The usual mode of bending pipes to a true curve is to fill the heavy tubes with rosin and the light ones with lead, and, fastening them in a vise, to give the required curve by suitable lever pressure, subsequently hammering the metal into proper shape. This last operation is both difficult and tedious, and, even when performed by a skillful workman, does not leave the metal perfectly smooth nor free from dents, while the section of the pipe can never be left, by handwork, perfectly circular.



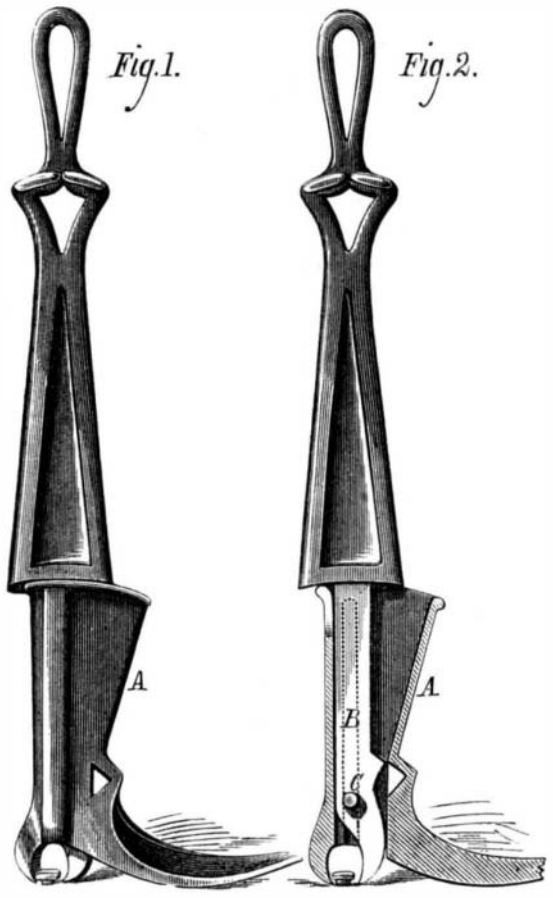
A new mode of bending copper and brass pipe is now the subject of patents pending in this country, in Canada, and in England. It consists, as shown in the engraving, Fig. 1, of the use of a spiral spring of ordinary square wire, which serves as a flexible mandrel, supporting the tube at all points during the bending process. After the curve is made, the spring, by turning it slightly in the direction of its coil, is compressed and thus easily drawn out

Any size of pipe, we are informed, can thus be bent and, as proved by several samples submitted to us, with perfect accuracy. The curve is true, the section a circle; no hammering whatever is needed, and there is no excessive crowding together of the metal on the inside, nor stretching of the same on the outside, of the curve. For square pipe, such as is used for gas fixtures, etc., the spring is reinforced by two strips of metal, as shown in Fig. 2, which are easily inserted and removed, and which serve to maintain the rectangular section of the tube.

The invention is one of considerable merit, and will doubtless soon find a widespread employment among coppersmiths, since its tendency is eminently labor-saving. For further particulars address the inventor, Mr. Morris L. Orum, care J. Snowden Bell, 702 Chesnut street, Philadelphia, Pa.

IMPROVED NAIL EXTRACTOR.

The object of the invention illustrated herewith is to provide a convenient means of extracting nails from wood work, without mutilating the latter or destroying the nail. The device is made in two parts. The lower boot-shaped portion, A, is hollow, and has formed on its inner side two vertical channels indicated by the dotted lines in Fig. 2. The upper portion consists of a handle and a downward extension, B, the lower extremity of which forms the movable jaw, the stationary jaw being cast on the portion, A. On the sides of part, B, are projections, C, which are inserted on the channels of portion, A, the malleable metal of which the latter is composed being previously heated and expanded to allow of the entrance. After the metal has cooled and contracted, it becomes of course impossible to detach the portions of the



implement, although their free motion within and upon each other is unimpaired. The forward projection of part A, serves as a fulcrum for the lever after the jaws have grasped the nail, as shown in Fig. 2. In order to confine the movable jaw to its work, an angular projection is made on one side of the bar, B, which enters a suitable recess in part A. The handle slides over the curved top of the lower portion; and when the bar, B, comes in contact with the latter, a leverage of the entire length of the device is gained, which speedily, it is claimed, draws out the most deeply imbedded nails.

Patented April 20, 1875. For further particulars address M. D. Converse, 68 Park Place, New York city.

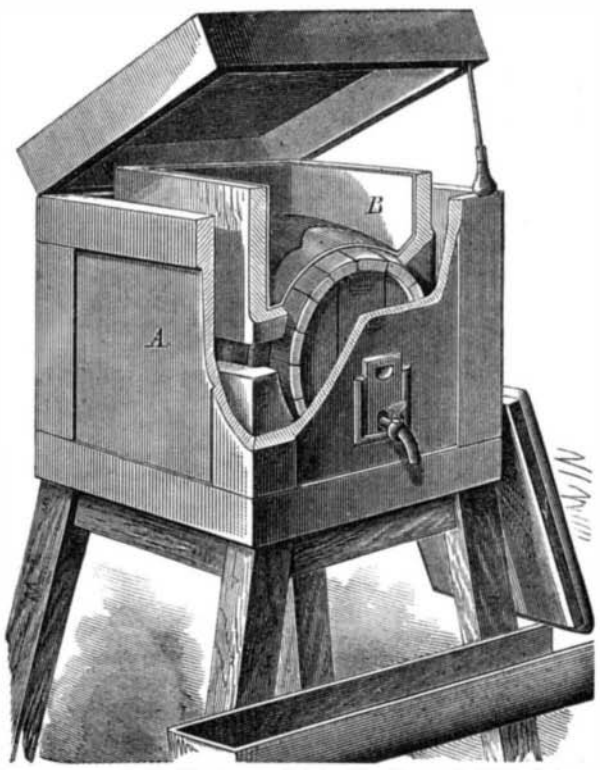
Value of Road Dust.

During a dry season, every country resident should secure several barrels of road dust. Those who keep poultry may secure by its use a valuable fertilizer, nearly as strong as guano, with none of its disagreeable odor. Place an inch or two of road dust in the bottom of a barrel; then, as the poultry house is regularly cleaned, deposit a layer an inch thick of the cleanings, and so on, alternately layers of each till the barrel is full. The thinner each layer is, the more perfect will be the intermixture of the ingredients. If the soil of which the road dust is made is clayey, the layers of each may be of equal thickness; if sandy, the dust should be at least twice as thick as the layer of droppings. Old barrels of any kind may be used for this purpose, but if previously soaked with crude petroleum or coated with gas tar, they will last many years. If the contents are pounded on a floor into fine powder before applying, the fertilizer may be sown from a drill. Road dust is one of the most perfect deodorizers of vaults—converting their contents also into rich manure. Place a barrel or box of it in the closet, with a small dipper, and throw down a pint into the vault each time it is occupied, and there will be no offensive odor whatever. This is simpler, cheaper, and better than a water closet, and never freezes or gets out of order. Mixing the road dust with equal bulk of coal ashes is an improvement, making the fertilizer more friable.—*Country Gentleman.*

BOHART'S BEER COOLER.

The annexed engraving represents a simple and inexpensive form of beer cooler, designed to receive the keg, which contains the liquid and from which it is drawn off for use. The advantages offered are that the cooling is effected with a small amount of ice and in as thorough a manner as may be desired, while the keg may be easily inserted and removed from the receptacle.

The device consists of an outer casing or box, A, provided with a hinged cover and supported by legs at a convenient hight Within and on the bottom are placed the skids, B, upon which the keg is set. Above the keg, and resting on its upper side, is a box, C, lined with sheets of zinc or other inoxidizable metal, which is curved so as to fit closely to the shape of the keg. The box, C, is packed full of ice and salt, and closed by a tightly-fitting cover. In the side of the box,



A, an aperture is made large enough readily to admit the faucet. A slide is provided, notched at its lower edge, which tightly closes the hole at the point of passage of the faucet pipe. The quantity of ice may be regulated according to the degree of coldness to which the beer is to be reduced, and, being placed directly upon the ke , is situated so as to exert its greatest cooling effect upon the liquid within.

Patent pending through the Scientific American Patent Agency. For further particulars address the inventor, Mr John N. Bohart, Denison, Grayson county, Texas

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