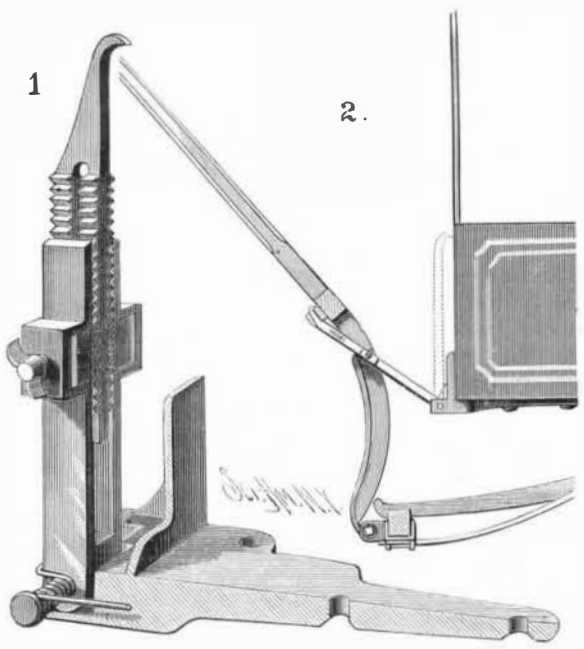
SHAFT SUPPORT.

The invention herewith illustrated was patented by Mr. James F. Pace, of Arcadia, La., and consists in a bar pivoted to the front of the vehicle and forced upward by a spring so as to press against the cross bar of the shafts and hold them raised. Near one end of the plate screwed to the bottom of the box is a standard adapted to be fastened to the dash-board. At the front end of the plate is a recess to receive the end of a fork, which is held in place by a bolt around which a powerful spring is coiled. The spring passes under and forces the fork upward, and its ends are secured in

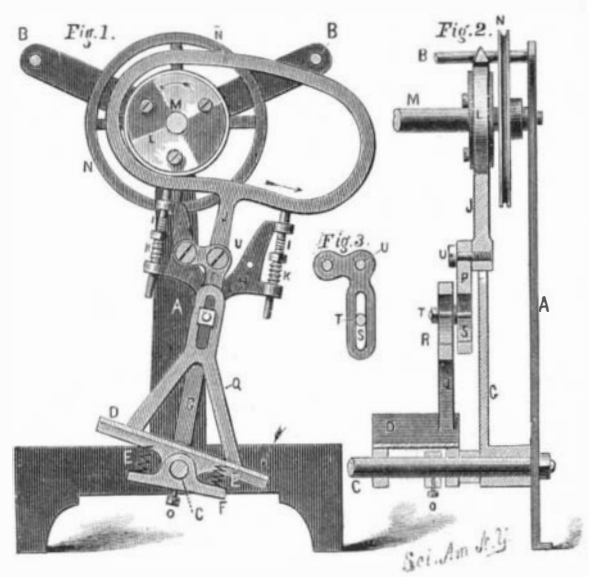


PACE'S SHAFT SUPPORT.

the plate. Each shank of the fork (shown enlarged in Fig. 1) is provided with a bend which forms a recess to receive clamp plates whose adjoining surfaces are transversely serrated. A right and left hand screw is held to turn in the bends, and is passed through the plates and through a longitudinally slotted bar, both sides of which are serrated. On the free end of this bar is an upwardly projecting hook, which enters a notched plate on the under side of the cross bar of the shafts. The bar is adjusted until its hook can pass into the notch, when it is clamped and held firmly between the serrated plates. The bar and fork are swung down, the shafts raised, and the hook passed into the notch; the fork and bar are pressed upward by the spring, and the shafts are held in a raised position. The dotted lines in Fig. 2 show the position of the fork and bar when not in use.

FOOT POWER.

Our engraving shows an improved foot power, to be used in place of the usual treadle crank and connecting rod for operating machinery by foot. The standard, A, united by top rods, B, and a bottom central shaft, C, form a frame. Rocking upon the shaft is a foot plate, D, whose ends are pressed upward by spiral springs held between the plate and a cross bar, F, held on the shaft by a binding screw by which the bar may be adjusted according to the inclination of the plate in its normal position. An upwardly projecting bar, G, is loosely mounted at its lower end on the shaft, and has a fork formed on its upper end, from the outer edge of each prong of which apertured lugs project. Through these lugs pass rods, K, projecting downward from the bottom



FIELD'S FOOT POWER.

of a curved frame, in the opening of which a friction wheel, L, having a rubber ring is located, and which is mounted on the driving shaft.

The diameter of the wheel is a little less than the opening in the frame. Spiral springs, surrounding the rods, K, are held between the lower lugs and nuts on the rods, and press the frame upward. From the bottom bar of the frame projects an arm, J, whose end is pivoted to the angle of an elbow lever, P. The upper arm of this lever is pivoted to one of the prongs of the fork, H, and the other arm is furnished with a longitudinal slot, S (Fig. 2), through which and the slot in the standard, Q, passes a pintle by which the pressure upon the wheel, L, can be regulated.

When the lower end of the foot plate is depressed, the swinging part of the device is moved in the direction of the middle arrow, and the standard, Q, which is independent of the arm, G, swings the lower end of the elbow lever in the direction of the arrow, thereby raising the curved frame and bringing its bottom bar in contact with the rim of the wheel, L, which is revolved in the direction of its arrow. When the opposite end of the foot plate is depressed, the swinging part is moved in the contrary direction, the angle lever is moved downward and also the frame, thereby bringing the top bar in contact with the rim of the wheel. The motion can be reversed by pivoting the angle lever to the other prong of the fork.

This invention has been patented by Mr. Henry Field, Jr., of New Bedford, Mass.

Natural Gas for Glass Making.

In the vicinity of Pittsburg, Pa., the use of gas drawn from the gas wells has been applied in the manufacture of glass. The *Glassware Reporter* says:

"It seems to us that the advantages of natural gas in the manufacture of glass are liable to be exaggerated, especially in so far as they act as an incitement to investors to erect factories in remote and inaccessible places, solely on the strength of the gas supply alone. To those who have any intention of going into the glass business on such grounds, we desire to say that the idea that cheap fuel is a considerable factor of success in the pursuit of glass making is a mistaken one. On a fair average, even if fuel were to be had for nothing, such an advantage would amount to only about five or six per cent of the total cost of operating a factory. This advantage is more than offset (in the case of factories started in the outlying districts) by the drawback of remoteness from market, and the lack of many conveniences, which can only be promptly had in the largely manufacturing centers. Take Pittsburg here for example; if a manufacturer breaks a shaft, or a driving belt, or other machinery, he can have men at work on repairs in half an hour from the time of the accident, whereas in country places such a mishap might necessitate his shutting down for a day, or even two or three. Of course, the places in the immediate vicinity of Pittsburg enjoy equal facilities with that city itself, but we have reference principally to more remote districts.

"With regard to this gas itself, its great unreliability and unsteadiness of pressure make it a very inconvenient fuel to use at times, and the saving of labor which was promised to result from its use has not been made manifest so far, for the men that attended the fires when coal was used have now to look after the gas, and see that its pressure is uniform and regular. We do not wish to be understood as underestimating or seeking to depreciate the value of this fuel, for it is undoubtedly very valuable, but there are many improvements necessary in the methods of its transmission from the wells to the consumer that must be adopted before it will so greatly surpass coal in cheapness and efficiency as to cause any perceptible cheapening in the cost of producing glass. We know one manufacturer, outside of Pittsburg, who has used natural gas largely, and as the result of his experience he expresses a wish that he had never seen it, so much trouble and inconvenience did it cause him. The gas industry (if so it may be called) is, however, young yet, and, like all new things, works crudely and unsatisfactorily at first, but doubtless improvements in the methods of application, control, and other particulars will be made, which will eliminate all or most of its disadvantages, and bring it to the front as an important adjunct to our manufacturing industries. It is cleanly, easily applied, and leaves no residue of dust or ashes, all of which are great advantages, but intending manufacturers who imagine that because they have an abundance of fuel they have everything, will not find this belief corroborated by actual experience."

IMPROVED JOURNAL BEARING.

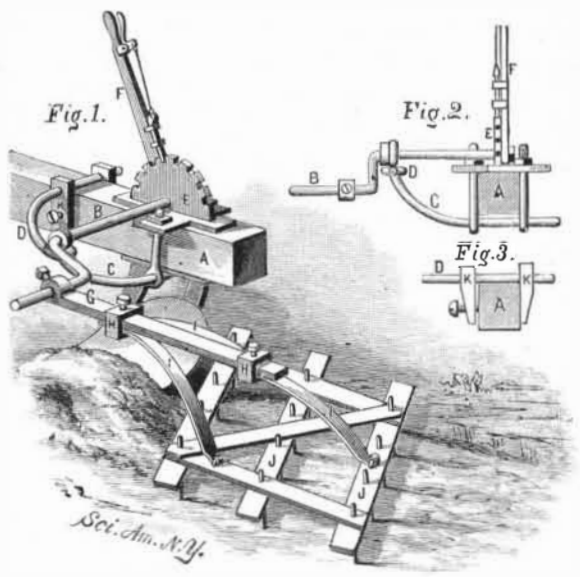
In the journal bearing shown in the accompanying engraving the block may be tightened up from time to time, as the bearing wears away, without disturbing the cap, and the box is secured to the bed frame by the same bolts that are employed to hold the cap permanently in place. Fig. 2 is a plan view, Fig. 1 a sectional elevation parallel to the journal, and Fig. 3 a section perpendicular to the journal. The bearing block, C, is fitted in a cavity in the cap, through the top of which pass adjusting screws, E, provided with jam nut, F, so that any wear may be taken up. This construction permits of extending the bolts, J, through both the cap and box to the frame. Lateral play of the block, C, is prevented by one or more set screws, K, which pass through one side of the cap and press the block against narrow faced ribs in the opposite wall of the cap, the block being provided with corresponding ribs. These ribs and the screw insure the proper lining of the block with the journal, and the latter effectually prevents side play of the block. The manner of oiling the journal is clearly indicated in the cut.

This invention has been patented by Mr. J. M. Elliott, of Winnsborough, S. C.

COMBINED PLOW AND HARROW.

In the combined plow and harrow lately patented by Mr. E. O. Long, of Hayesville, O., the plow beam and harrow are connected by a crank rod, a connecting rod, and a set of springs—the crank rod being secured to the plow beam and held against the draught strain of the harrow by braces, and the springs and connecting rod being so connected by bands and set screws that the harrow can be readily adjusted.

The rod, B, works in bearings formed upon a plate attached to the beam by bolts, and also upon the brace, C, which passes through the eyes of the bolts at the lower side of the beam. The arrangement of these parts is plainly shown in the sectional view, Fig. 2. The curved brace, D,



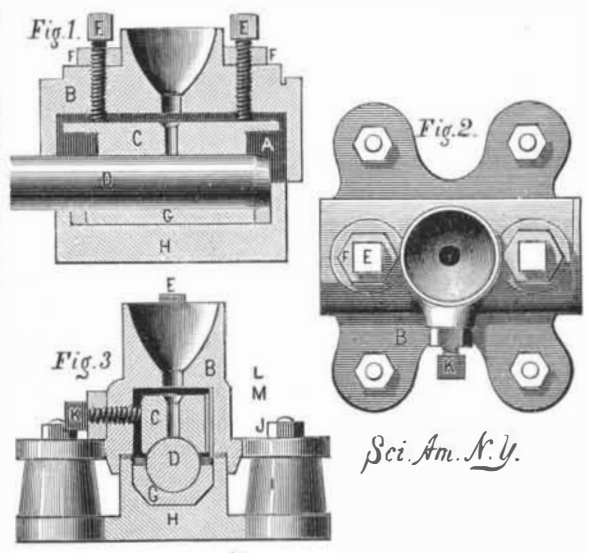
LONG'S COMBINED PLOW AND HARROW.

has an eye formed in its outer end through which the brace, C, passes, and at its other end is provided with two arms, K (Fig. 3), by which it is clamped to the beam, as indicated. The outer part of the rod, B, is bent into crank form and passed through an eye in the forward end of the bar, G, which is held in place by a set screw. To the bar, G, at a little distance from the rod, are secured by a band and set screw the forward ends of two springs, I, whose other ends are attached to the forward part of the harrow. A third spring is secured to the bar, G, and to the middle of the rear part of the harrow. The harrow frame is strengthened by one or more braces, and is provided with teeth in the ordinary manner.

With this construction the crank rod can be readily attached or detached from the plow beam, and the harrow can be adjusted nearer to or further from the beam, as may be required. The springs hold the harrow down to its work and allow it to rise in case it strikes an obstruction. The crank shape of the rod allows it to be adjusted to a plow beam of any height. The inner end of the rod is made eight square, and to it is fitted the detachable lever, F, which moves along the side of a catch plate, E, provided with notches which engage with a pawl sliding in keepers on the lever. By moving the lever the harrow can be raised to allow it to pass obstructions and when turning round at the end of the furrow.

A Prehistoric Human Tooth.

The annual report of the Peabody Museum chronicles the finding of a human molar tooth, by Dr. C. C. Abbot, in the



ELLIOTT'S IMPROVED JOURNAL BEARING.

gravels near Trenton, affording paleolithic implements. It is a rolled and worn tooth, and is therefore of the same age as the implements. Dr. Putnam, Curator of the Museum, says that the discovery of the tooth removes the little doubt there was about the gravel bed origin of the portion of a human skull obtained some years ago at Trenton by Dr. Abbot from a person who stated that it was found in the gravel.