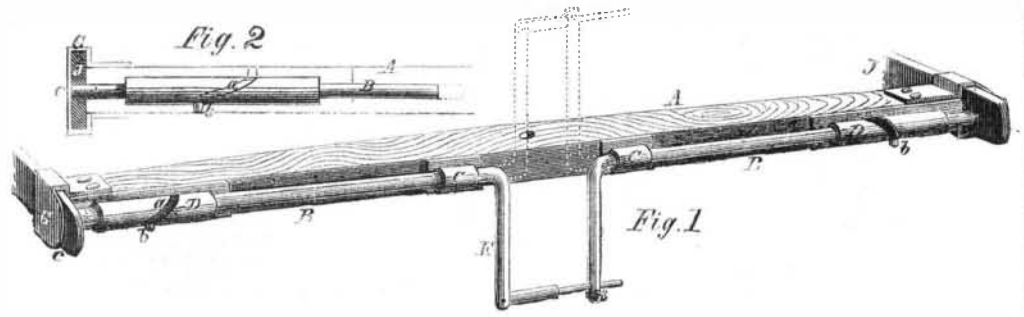
IMPROVEMENTS IN VEHICLES.

Often when a horse that is drawing a carriage becomes frightened or restive, it is a matter of some difficulty to release it from the whiffle-tree, or if it be in shafts, with the traces attached thereto; without there is some method of loosening the shafts, the lives of the persons in the vehicle will be endangered. The inventions of Eugene Duchamp, of St. Martinsville, La., provide for both these contingencies. The first is an improvement in whiffle-trees which is seen in the first engraving, Fig. 1 being a perspective view, and Fig. 2 an enlarged front view of one end of a whiffle-tree.

portion of the thill, G, has shoulders, *b*, that can pass in the box when the slot is upright and when the slot is horizontal catch against the inside and cannot pass out when the horse pulls the shaft. J is a swinging gate hinged to the metal bands, C, which has a recess made in it so that it prevents the box, E, rotating in its bearings when it is hanging over, and will allow it to be rotated when it is elevated out of the way.

The inventor has two patents for these improvements, both dated August 16, 1859, and he will be happy to give any further information upon being addressed as above.

DUCHAMP'S IMPROVEMENTS IN VEHICLES.

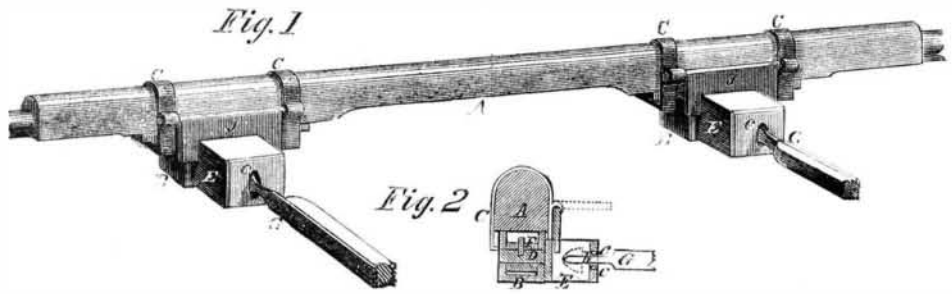


A a whiffle-tree detached from the axle-tree of a carriage. B B, are two rods which are fixed in the back of A, by guards, C, and D, and they are capable of longitudinal motion in opposite directions by means of arms or cranks, E E, which are bent portious of the rods, and are operated by the driver by means of a chain or rope. The guards, D, have slots, *a*, made in them obliquely to the axis of the rods, B B, by which the cranks E, become levers for operating the rods. The slots are in opposite directions, and there passes through them pins, *b*, that are attached to the bars, B B. Now it will easily be seen that by elevating the levers or cranks, E, the bars will be drawn inward, and by depressing them their ends will be forced outwards by the motion of the pins, *b*, in the curved slot, *a*. On each end of the whiffle-tree a loop or box, G, provided with a projecting lip, *c*, is placed and into these boxes the ends of the traces, J, are placed, the cock-eye of the trace being in a line with the rods B B. To secure the traces the levers, E E, are depressed, and the ends of the bars pass through the cock-eyes of the traces and hold them tight and secure, the boxes, G, preventing the traces from shaking off. When from any cause it becomes necessary to release the horse, the levers, E, are elevated, and the ends of the bars withdrawn from the trace-tugs and the horse is free to run away or do any mischief without endangering the lives of the occupants of the vehicle.

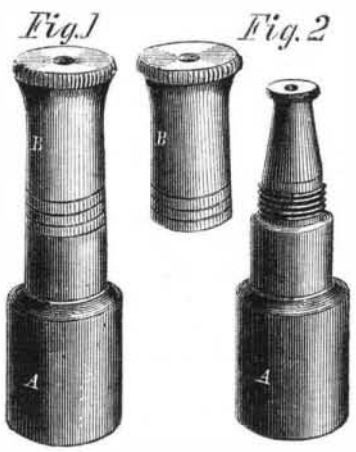
The second improvement is in the method of attaching shafts to vehicles by which they can readily be attached, and which will not be liable to accidental detachment, and no bolts or screws are used, and the shafts can readily be detached when it is desired. Fig. 1 is a perspective view of the front axle of a carriage, with the shafts attached, and Fig. 2 is a vertical cross section through the shaft and the connecting box. A is the front axle of a carriage, and B, is a hollow journal box rigidly secured to A, by metal bands, C. This box, B, serves as a bearing for the stem or gudgeon, D, of the coupling box, E, which is prevented coming out of the box, B, by a pin or collar, F, yet it is free to rotate in its bearing in the box. The coupling box, E, has an elliptical slot, *e*, through its end, and is made hollow, for the purpose of preventing the end of the thill-iron passing out of the box when the slot is turned a quarter round from the position shown in Fig. 1. The fluked

HICKS' PATENT GAS-BURNER.

Our engraving fully exhibits the construction of a valuable improvement in gas-burners, the invention of L. E. Hicks, of this city. Fig. 1 shows the burner, A, and cap, B, connected and ready for use, and Fig. 2 shows them detached. The burner is an ordinary one, the pattern called "fish-tails" being preferred. The invention consists in a metallic cap, B, which is provided with



a hole in the top a little larger than the orifice of the burner. The cap is nowhere in contact with the burner except at the base, so that a little chamber is formed by the space between them, and the heating of the gas in this, and the opportunity it has to regulate its own pressure by being thus diffused before consumption, are the chief causes of the saving.



In presenting the above view of Hicks' patent gas-burner to the consideration of the public, we deem it proper to set forth some of its advantages over other burners now in use. The great necessity of a thorough means to regulate and economize the consumption of gas has prompted many inventors to make experiments in the improvement of burners; and the result has been the introduction of many that have combined to complicate rather than facilitate the object for which they have been intended. No such failure or intermediate degree of success has attended this burner. Its utility over others has been voluntarily acknowledged in numerous instances where it has been applied; while the perfect light which it emits has made it popular with those who have tested it. It contributes greatly to the saving of gas. Some of the parties using it testify to its saving one-half in the economy of its consumption.

It has been subjected to numerous tests by gas-engineers and scientific gentlemen, and certificates in favor of it have been shown us from such men as Professor John Torrey, United States Assayer; the late Dr. William H. Ellet, Chemist of the Manhattan Gas-light Company; J. K. Brick, Esq., Engineer of the Brooklyn Gas-light Company. Many eminent merchants and other well-known citizens in this city have adopted it, and laid aside the ordinary kind of gas-burners. Among the many persons who have Hicks' patent burner in use are the proprietors of the new Fifth-avenue Hotel.

The patent has been assigned the the New York Gas-burner Company (office 346 Broadway, room No. 18), who are manufacturing them on a large scale. Further information will be cheerfully given by addressing the company as above.

THE EXPENSES OF A PRINTING OFFICE.—Some idea of the expenses of a printing-office may be formed when we state (what is really a fact) that the white paper alone on which this week's edition of the SCIENTIFIC AMERICAN is printed, costs the large sum of $932·88. For the press-work, *i. e.*, the simple item of printing (without including editorial labor, composition, electrotyping, wrapper-writing, folding and mailing, and other minor expenses), on this week's edition we pay over $220. It is difficult for subscribers who receive their SCIENTIFIC AMERICAN regularly, fifty-two times in the course of a year (for which they pay only two dollars), to conceive the fact of the edition of a single week costing so much money; nevertheless, our figures as given above are literally true.

CALIFORNIA QUICKSILVER MINES.—Very rich quicksilver veins were discovered at Enriquita, Cal., in January last, by Mr. C. J. Laurencel and extensive preparations have recently been made to work them. Roads have been made and furnaces have been erected, and about the 15th of August they were to commence smelting the ore. The mines are situated twelve miles from San Jose, in the canon of the Sierra Azul, through which flows the Capitancillos creek. The Guadalupe mine is situated in the same canon, a mile and a half lower down, and the road to the Enriqueta mines runs directly through the Guadalupe hacienda.