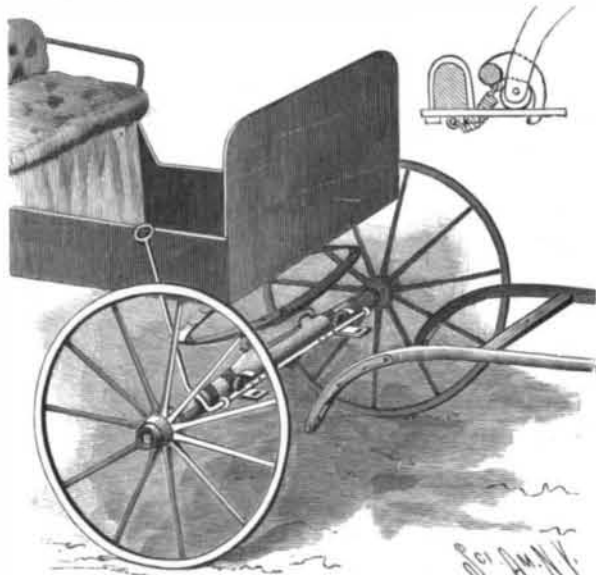


A HORSE DETACHING DEVICE.

To conveniently free a runaway horse from a vehicle, the attachment shown in the accompanying illustration has been invented and patented by Joseph Friedlander, of No. 219 West Commerce Street, San Antonio, Texas, the device being serviceable also for guiding the vehicle after the horse has been freed from it. In bearings secured by clips to the front axle is journaled a shaft from which a handle bar extends up to within convenient reach of the driver, and on the shaft are hooks, each adapted to enter a slot or opening in a forwardly extending keeper plate clipped to the bottom portion of the axle. The hooks may be formed integral with the shaft, or they may have on their heel portions screw shanks

**FRIEDLANDER'S HORSE DETACHING DEVICE.**

adapted to engage threaded apertures in the shaft, thus facilitating the adaptation of the device to vehicles having thills at different distances apart. The thill irons preferably have at their lower ends rollers, as shown in the small figure, and when the handle bar has been moved backward to lift the hooks the thill irons are placed on the keeper plates, a spring connecting the hook shaft with the axle then returning the hooks to the plates immediately upon the release of the handle bar. The slots in the plates may, if desired, have rubber cushions to assist in holding the hooks in engagement with the plates and to prevent rattling. In case of a runaway horse or team, the moving rearward of the handle bar, as shown in the illustration, releases the thills from the vehicle, the driver then keeping hold of the hand bar to guide the vehicle until it comes to rest. This inventor has also applied for a patent on a vehicle brake especially designed for use in connection with the horse detacher.

WALMSLEY'S IMPROVED COMPOUND BLOWPIPE.

This blowpipe is so constructed as to make it specially adapted for plumbers, dentists, and jewelers, giving an exceedingly fine and non-oxidizing flame, making it unequalled for lead burning, using illuminating gas and a flux of soldering salts. It has been patented by Mr. T. B. Walmsley, of No. 905 East 149th Street, New York. It is made in two forms, on a stand, as shown, and without the swivels, so

**WALMSLEY'S IMPROVED COMPOUND BLOWPIPE.**

that it can be used by hand, as in lead burning. The process of lead burning is a new one, and is given in conjunction with the oxyhydrogen process at the New York Trade School, by Mr. Walmsley, as instructor at that admirable institute.

It is well adapted for the use of dentists and jewelers, as the flame is very fine and cannot be blown out—a fault common with other compound blowpipes. It also has several blowpipes of different sizes, which can be put in position at once to suit the work engaged on.

It will be seen that no regulating cock is used on the blast, the difference in size of the blowpipes enabling the workman to get the desired flame by regulating the supply of gas. It may be well to mention that natural or gasolene gas can be burned as well as illuminating gas.

By using a blowpipe in connection with illuminating gas and a flux of Yager's salts a first rate job of lead burning can be done, such as the lengthening of traps and bends and lining of tanks or sinks, where the seams can be burned flat. It will be found easier to the amateur to practice this form of burning than by the oxyhydrogen process, and all the lead burning needed in practical plumbing can be done by this process.

Sheet Lead, Butt Seam.—Fit the edges close and clean, $\frac{1}{4}$ inch wide, with shave hook. Apply the flux with small pencil brush and regulate the flame to suit the thickness of lead to be burned—3 and 4 pound sheet lead, the flame should be very fine, not thicker than $\frac{1}{8}$ inch; 5 and 6 pound lead, $\frac{1}{2}$ inch flame is suitable. If the mouth is used for the blast, blow easily until the lead begins to fuse, then give a circular motion to the flame, and fusion will be complete. The blowpipe should be kept 2 inches from the lead to get the proper heat from the flame.

In using a foot bellows, more care will have to be taken to prevent burning a hole in the lead. The flame must be used more quickly than when the air blast is supplied by the mouth.

Sheet Lead, Lap Seam.—In preparing this seam care must be taken to shave both upper and underneath side of lap, also surface of bottom, allowing the cleaned surface of bottom to project $\frac{1}{4}$ inch. Cut a strip of lead $\frac{1}{4}$ inch wide and use when burning this seam, holding the strip across the seam, melting $\frac{1}{4}$ inch at each movement and in advance of the preceding drop.

Lead Pipe Burning, such as Lengthening of Traps and Bends.—Cut both ends so as to fit close, and with a fine rasp bevel the inside of one end its own thickness and repeat the same on the outside of the other piece; this will give a perfectly smooth interior of the pipe. Shave $\frac{1}{4}$ inch on each piece, making a $\frac{1}{2}$ inch seam. When possible, it is better to use a wood plug or a piece of iron pipe covered with paper when burning; fuse carefully all round, and if the pipe is to be exposed, it can be loaded by using a strip of lead, as in the lap seam, and finished off with a fine file and sandpaper, entirely concealing the point of juncture.

Burning Lead and Brass.—Carefully tin the brass and wipe off clean all surplus solder and slip the brass coupling or ferule $\frac{1}{2}$ inch inside the pipe. Begin by fusing the lead and brass, using freely of flux and letting the greater heat dwell on the brass. A strip of lead can be used to finish this joint when needed. In all cases when burning, keep the blowpipe 2 inches or $2\frac{1}{2}$ inches from the seam, and fusing will the more readily take place. A very little practice is needed to burn a good seam.

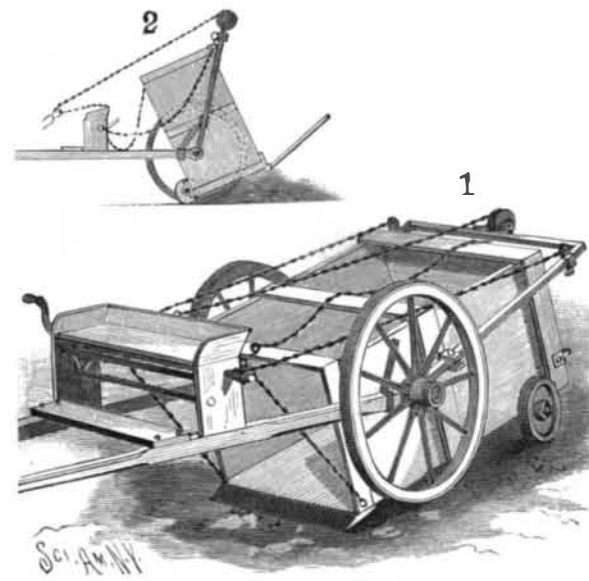
Employer's Liability.

The Supreme Court of Minnesota held, in the recent case of Carlson vs. Northwestern Telephone Exchange Company, that the decisive tests as to whether, in any given case, an employe is to be regarded as a vice-principal or a fellow servant is not his title or his rank, but the nature of the service which he performs; that if he is authorized to perform duties which are the absolute duties of the master, he is to the extent of a discharge of those duties a vice-principal, and that whenever the nature and magnitude of the master's work, whether it be that of construction or otherwise, are such that it is necessary that orders be given regulating the conduct of his employes and directing them where to work, it is not only right but the absolute duty of the master to give such orders, and in obeying such orders the employes have a right to assume that the master, in giving the orders, has exercised due care for their safety. In the case before the court it appeared that the defendant in excavating a ditch placed the work and the men employed thereon, of whom the plaintiff was one, in charge of a foreman, who had general oversight of the work. The men were subject to his orders; he had authority to employ and discharge them and direct them what to do and where to work, and was the supreme authority there present. The foreman negligently ordered the plaintiff from the place where he had been working into the ditch at a point where he had not previously worked, which was a place of unusual danger by reason of a crack in the earth on the side of the ditch and defects in the curbing, which danger and defects were not obvious or known to the plaintiff, who obeyed the order and was injured by the caving in of the ditch. The court held that in giving the order the foreman was a vice-principal and the defendant liable for his negligence.—Bradstreet's.

LONDON barometers on January 9, 1896, showed a pressure of 30.934 inches at 9 P. M. Only four times in a hundred and fifty years has a height above 30.9 inches been recorded. On the same day, near Chester, the barometer reached 31.013 inches.

A SNOW AND DIRT REMOVING CART.

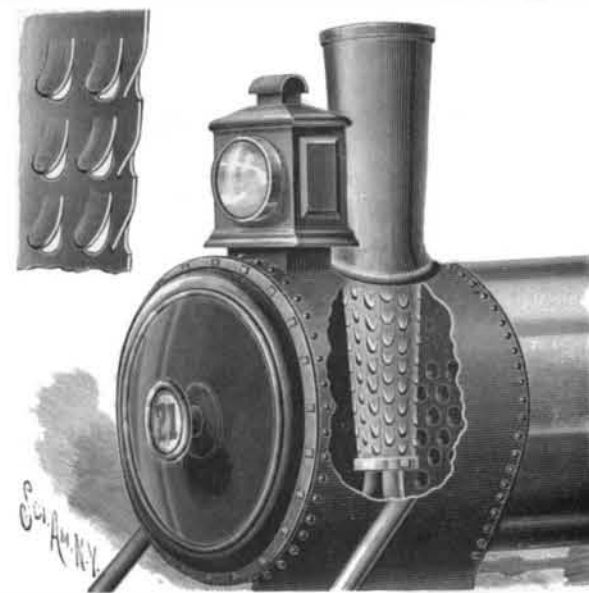
A cart designed to act as a scraper in taking up snow and dirt, as well as afford an efficient vehicle for removing and dumping them, is shown in the accompanying illustration, and has been patented by J. R. Hawkins, of Mountainville, N. Y. The cart is preferably of sheet metal, having a scraper at the front end of its bottom, and is mounted on short axles extended from the ends of a U-shaped frame which has on its side bars adjustable trunnions engaging the sides of the cart body, permitting the latter to swing, the rear ends of the shafts being journaled on the axles, and the shafts supporting a seat for the driver. At the front lower corners of the cart body are eyes engaged by hooks on chains which extend up to the

**HAWKINS' SNOW AND DIRT CART.**

seat, preventing undue dropping of the scraper when the street surface is uneven, and at the rear are small wheels to support the bottom of the cart body at the slight inclination necessary to facilitate the scraping up of dirt or snow from the street surface. To load the scraped up material into the rear part of the cart body, the driver swings the front end of the cart body upward by means of a chain or rope extending rearward from the seat, and passing around a pulley attached to the middle part of the U-shaped frame, the lower run of the chain extending forwardly to a cross bar. On letting go the chain the cart body again swings downward to the position shown in Fig. 1. To dump the contents of the cart, as shown in Fig. 2, chains attached to the rear end of the U-shaped frame are extended to a winding shaft under the seat, and the turning of a crank shaft elevates the rear end of the frame, its movement being checked by stops adjustably held on the shafts. After the frame has been swung up, the winding shaft may be locked, and the other chain pulled upon by the driver to cause the cart body to swing on its trunnions, insuring the complete dumping of the contents.

A LOCOMOTIVE SPARK ARRESTER.

A device designed to prevent the escape to the smoke stack of sparks and cinders, while permitting the free

**SOLOMON'S SPARK ARRESTER.**

passage of the products of combustion, is shown in the accompanying illustration. It has been patented by Edgar J. Solomon, of Carlinville, Ill. To the exhaust nozzle is fitted the lower end of a conical tube whose upper end fits into the lower end of the smokestack, and in the sides of the tube are U-shaped slits, having tongues of metal, which are pressed inwardly as shown in the small figure. The gaseous portions of the products of combustion pass freely upward to the smokestack, while the solid portions, striking the tongues, are thrown back into the smoke box.