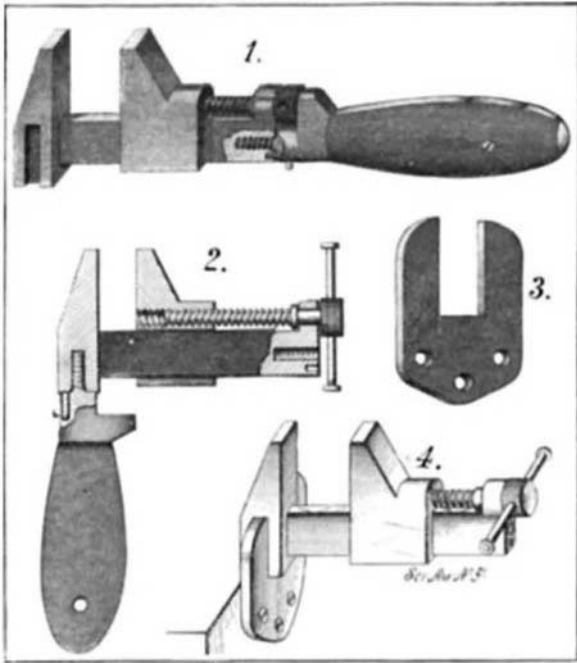




CONVERTIBLE WRENCH AND VISE.

Pictured in the accompanying engraving is a very handy tool, which may, at will, be used either as a



CONVERTIBLE WRENCH AND VISE.

wrench or a vise. The wrench is of the usual sliding-jaw type. The handle, however, is detachable, being screwed into the lever bar and normally held by a keeper bolt, as shown in Fig. 1. When it is desired to convert the wrench into a vise, this bolt is drawn back, and the handle unscrewed from the bar and screwed instead into the heels of the fixed jaw of the wrench. The movable jaw is then operated by means of a lever rod, which is passed through an opening in the milled head of the adjusting screw, and, as shown in Fig. 2, the tool is thus converted into a small but powerful hand wrench. As a convenient and preferred means for converting the hand vise into a vise capable of being readily fixed upon a stationary bench or the like for holding work, a bracket plate is provided. As shown in Fig. 3, this plate consists of a flat sheet of metal, having an open slot formed therein and adapted to receive the heel of the fixed jaw of the wrench. The side walls of the slot fit snugly into a pair of channels formed in the fixed jaw, thereby securely holding the device against turning, as indicated in Fig. 4. The bracket is held by screws to the edge of the work bench, and thus the tool is converted into a bench vise. Mr. W. P. Foster, of Jacumba Hot Springs, Campo, Cal., has just procured a patent on this ingenious combination tool.

A PORTABLE PNEUMATIC DUSTER.

The use of suction apparatus for household cleaning is now so general that it no longer arouses comment. A form of apparatus in which the same principle is involved, has recently been brought out in Paris and will doubtless prove of interest, although the principle is not new. The contrivance in question is a portable

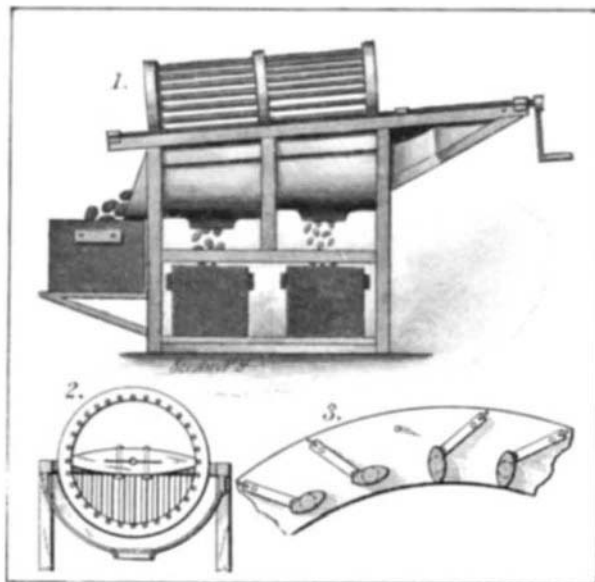


A PNEUMATIC DUSTER.

pneumatic duster, consisting of a bellows constructed somewhat after the fashion of an accordion. From the bellows a tube leads, by which an ordinary duster is carried. Within the bellows packing material is contained which retains the dust gathered. The duster is passed over the object to be cleaned in the ordinary way, and the dust which is displaced is drawn into the tube by operating the bellows. As soon as the dust is caught by the packing material, it cannot be discharged by compressing the bellows. When the packing is quite full of dust, it is taken out and thrown away and new packing is inserted.

FRUIT AND POTATO SORTER.

We illustrate herewith a very simple yet effective machine for sorting fruit or potatoes, which has recently been patented by Messrs. Dana W. Lamb and George Fair, of Pontiac, Mich. The machine comprises a frame in which the sorting cylinder is mounted to rotate. The sorting cylinder consists of two screen sections formed by two series of parallel bars connecting two outer head rings with a common intermediate ring. In the first section of the cylinder these bars are fixed, but in the other section, or the discharge end of the cylinder, the bars are so arranged that they can be adjusted to increase or decrease the screen openings formed between them. This arrangement is indicated in Fig. 3. The bars are oval in cross section, and turn in bearings in the head ring and intermediate ring. Each bar is provided at the outer end with an operating lever, of spring metal, which lies against the face of the head ring. By means of these levers the bars may be turned with the longer axes of the ovals in vertical position, or with these axes in horizontal position, as shown, being held in these two positions by pins on the head ring. It will be evident from Fig. 3 that when the bars are upright, the widest possible space is obtained between them.



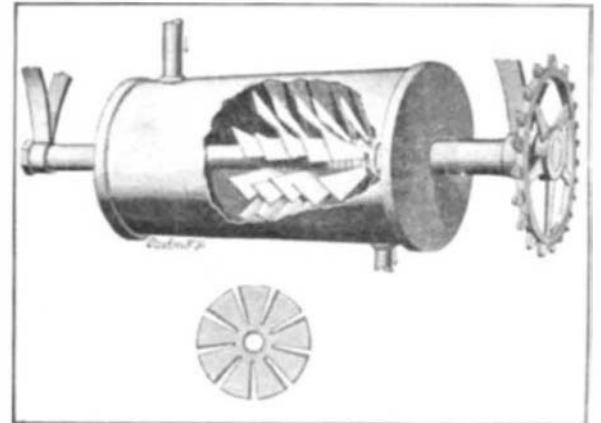
FRUIT AND POTATO SORTER

In operation the potatoes or fruit are fed into the cylinder from a hopper, shown at the right in our drawing, and the screen is rotated by means of a crank on the end of a shaft, which is secured to the intermediate ring of the cylinder, as illustrated in the cross section, Fig. 2. The cylinder is slightly tilted to assist the potatoes in traversing its length. Below each screen section and at the end of the cylinder is a chute leading to a suitable receptacle. The smallest potatoes will fall through the opening in the first section, and the seed potatoes through the second or adjustable section, while the large or marketable potatoes pass out at the end of the cylinder.

DEVICE FOR MUFFLING THE EXHAUST FROM ENGINES.

A patent has recently been granted to Mr. William J. Hewitt, of Del Monte, Cal., for an improved muffler adapted to muffle the exhaust from engines, particularly explosive engines. As shown in the accompanying engraving, the muffler consists of a cylinder within which a series of circulating wheels are mounted to rotate. Each circulating wheel comprises a number of blades inclined like fan blades and arranged in circular series about a hub. A face view of one of these wheels is shown in the engraving. The circulating wheels are suitably spaced apart, on the shaft which carries them by means of collars. The heads of the cylinder are formed with projecting sleeves terminating in brackets which provide suitable support for the muffler. Ball bearings are formed in these brackets for the shaft of the muffler. The shaft is rotated by means of a sprocket wheel at one end. In operation, the exhaust passes into the cylinder through the inlet pipe shown at the left in the engraving. The circulating wheels, it will be observed, are located near the outlet end of the cylinder, and the exhaust is permitted to expand in the space between the inlet and the circulating members, thus losing a portion of its energy.

It then impinges against the moving blades, whereby additional force is absorbed, while the revolution of these blades produces a suction which tends to draw out the burned gases from the exhaust valve and considerably decreases the back pressure, thereby increasing the speed of the engine. The exhaust is now discharged through the outlet pipe with hardly audible sound. If it is desired, the circulating members may be so positioned upon the shaft that the space between



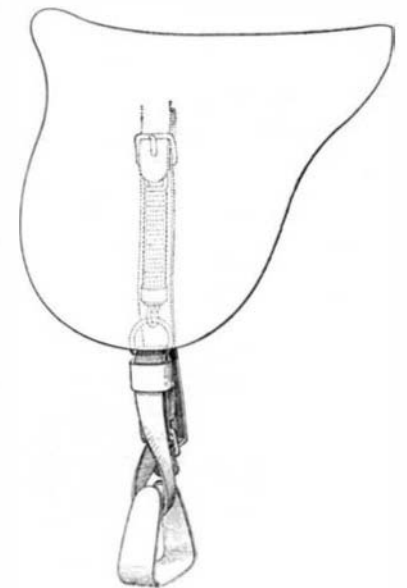
MUFFLER FOR EXPLOSIVE ENGINES.

them gradually increases as they approach the outlet, thus giving the gas a better opportunity to expand.

ODDITIES IN INVENTION.

SADDLE.—Pictured in the accompanying engraving is a saddle provided with stirrups so constructed as to

ease the jolts of horseback riding. Instead of the stirrup straps usually employed, a spring hanger is substituted, which, as shown by dotted lines, consists of a heavy coil spring, concealed under the side flap of the saddle. In use the rider bears his weight on the straps, and the uneven or sudden movements of the horse are taken up by the springs, which thus cushion



SADDLE WITH SPRING STIRRUP STRAP.

the jolts. This renders horseback riding much less fatiguing, particularly to those who are not accustomed to this sport.

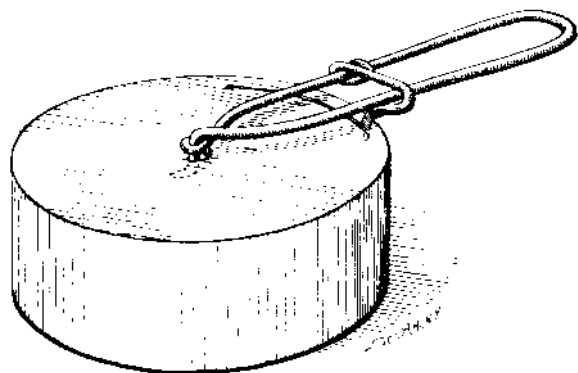
SULKY.—It is difficult to classify the novel vehicle shown in the accompanying engraving. It is in reality a cross between a saddle and a sulky. The seat of the sulky occupies the position of the ordinary saddle, and the feet of the driver are supported in stirrups. But the saddle, instead of resting on the horse, is supported on a yoke frame, that carries a pair of sulky wheels, which run along the ground on either side of the horse. Coil springs are interposed between the posts which carry the wheels and the yoke piece to which the saddle is secured, so as to take up any unevenness in the road. With this type of sulky the driver is afforded all the facilities of a riding jockey in the con-



SULKY.

trol of his horse, while at the same time the horse carries no weight. Sharper turns can be made than if the vehicle were dragged behind the horse and, furthermore, the sulky tends to steady the running of the horse.

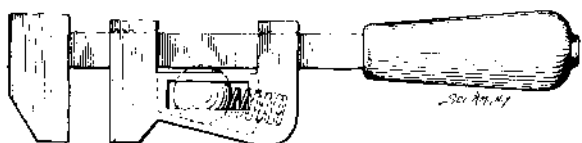
CAN-OPENER.—In the accompanying illustration we show a very simple can-opener which has recently been patented. It consists of a handle formed of heavy wire bent to proper form and terminating in a sharp prong adapted to be driven into the top of the can at



ADJUSTABLE CAN-OPENER.

the center to serve as a pivot or fulcrum on which to turn the can-opener. The cutter comprises a carrier also formed of heavy wire and a projecting prong with sharpened edge and point which constitutes the cutter proper. The carrier is mounted on the handle in such manner that it may be moved to any desired position thereon. The can-opener is thus made adjustable to any size of can. The method of using the device is clearly shown in the illustration.

WRENCH.—The wrench shown herewith is adapted to be instantly adjusted to fit any nut merely by the pressure of the hand, in which adjustment it automatically becomes rigidly locked when pressure is applied between the jaws. Instead of the usual rack and worm feed for the movable jaw, the latter is moved by hand to the desired position, and is there held by a steel ball which is carried in a suitable housing in the movable jaw. This ball is pressed by a coil spring between



WRENCH.

the shank of the wrench and the inclined wall of the housing. It will be evident, if pressure be applied to move the jaws apart, the movement will tend to move the ball into the narrower end of the housing, and firmly wedge it between the inclined wall and the shank of the wrench. Thus the greater the pressure between the jaws, the more securely will the movable jaw be locked. When it is desired to move the jaws apart, this can readily be done by seizing the ball between the fingers and drawing it back, when the movable jaw will be unlocked, and can be moved to any desired position.

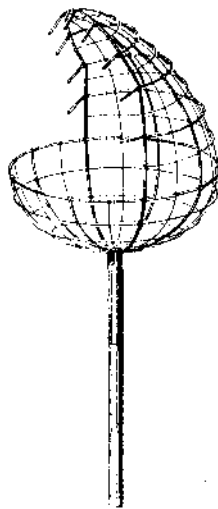
FIRE-ESCAPE.—The fire-escape shown in the accompanying illustration, is made up of a series of intermeshing links, which are individually hooked into eyes set into the side of the building. The advantage of this construction lies in its cheapness and simplicity, and the readiness with which the links may be applied or removed. The links are formed of metal rods bent to a U-shape, or similar to the links of a "ladder," or "square link" chain; but the free ends of each link are bent back to form hooks for engagement with the eye. In setting up a ladder the bottom link is first applied; then the ends of the next link are passed through the first link and hooked on to their respective eyes, and so on, each link serving to hold in place the upper end of the one immediately below it. The upper end of the last link is held in place by a metal



LINK FIRE-ESCAPE.

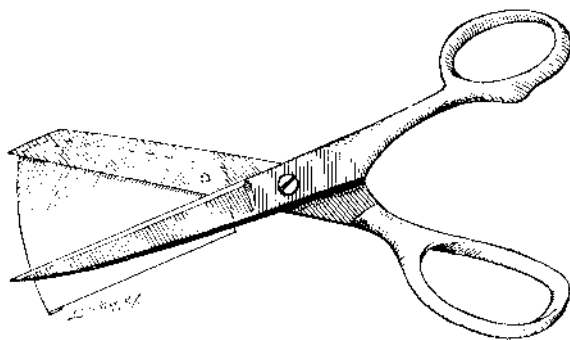
bar, secured to the sides of the building. In order to provide access to the ladder from all parts of the building two parallel rails are mounted between each tier of windows, so that a person walking on the lower rail, and using the upper one as a hand rail, can easily make his way to the ladder. These rails are held in socket pieces attached to the building, and can be readily applied or removed when desired.

FRUIT PICKER.—A simple device for picking fruit, which has recently been invented, is illustrated in the accompanying engraving. It consists of a wire basket formed with an upwardly-projecting hood, which is provided at its upper edge with projecting wire hooks. In use these hooks are slipped over the particular apple, pear, or other fruit desired, and then a slight pull will cause the fruit to drop in the basket. The fall being very short avoids bruising of the fruit. The openwork of the basket prevents dirt from collecting therein and permits the picker to determine when it is full.



FRUIT PICKER.

MAIL SHEARS.—When opening an envelope by cutting off the end with a pair of shears, one is quite apt to clip off an excessive portion, and cut into or injure the contents of the envelope. To prevent this the scissors guard illustrated herewith has been invented. It consists of a piece of sheet metal of approximately triangular shape which is fastened to the upper blade of the shears, and extends downward against the lower blade. An ear formed on the lower corner of the plate prevents the blades from opening too far. In use the end of the envelope is pressed against this guard plate, which serves as a gage to determine the width of the portion cut off. The plate is held in place



MAIL SHEARS.

by screws, so that it may be easily removed when it is desired to use the shears for other purposes.

Brief Notes Concerning Inventions.

A tablet to the memory of Eli Whitney, the inventor of the cotton gin, has been erected at the roadside on the old Whitney estate at Westboro, Mass. The memorial is quite a modest one, but it was placed in such a position that it will be observed by all passers-by.

A machine for skinning tomatoes was recently put into operation at a large canning factory at Woodstown, N. J. Heretofore this work has been done by women, and in the larger establishments it was necessary to employ a great number of them during the tomato canning season, but the operation of the machine is said to be such a great success that it is likely that there will be but little for these girls to do in the future. The machine takes the vegetable directly from the scalding vat and removes the skin from the tomato quickly and effectually.

Public attention has been called in England to a furnace of new design which, it is claimed, will not only prevent smoke but greatly increase the efficiency of the coal used in it. The invention was announced by Sir Joseph Primrose, who is very largely responsible for the invention, at a banquet in Glasgow which was attended by engineers and others interested in matters of this character. The invention consists of burning the coal in a furnace surrounded by a water jacket separated from the boiler so that the gases do not come in contact with the boiler until they have been completely burned. Sir Joseph said that he had declined to say anything about this new boiler until he had been thoroughly satisfied of its efficiency in every way by actual tests. The matter was made the subject of a report by Consul-General Richard Guenther, at Frankfort, Germany.

An entirely new thing in the manufacture of pocket knives comes from Germany, the firm of J. A. Henckels, Solingen, being responsible for it. In these knives, the handles are sawed from one solid piece of ivory, pearl, or tortoise shell. There are no bolsters, and as the lining and back are in one piece the differ-

ent parts consist merely of the blades, springs, rivets, and handles. In this construction all the blades are necessarily on one side. The one of ivory, for instance, is 5/8 inch wide and 9-32 inch thick. It has four blades, and the two pairs are separated from each other by a partition of ivory. Because of the impossibility of obtaining pearl and tortoise shell of sufficient thickness, these materials are made up into small two-bladed knives only. These knives have an exceedingly neat appearance, the absence of metal being very noticeable.

In a recent report made by Consul-General Guenther at Frankfort, Germany, he calls attention to a new metal which seems to be possessed of a number of virtues, the invention of a French engineer, Albert Nodon, and who has called the new material "nodium," after his own name. It is lighter than aluminium, has the color, luster, and structure of steel, has the malleability of bronze and has a conductivity for the electric current equal to that of copper of the same weight. It is suitable for being cast into forms, and the inventor hopes that it will be found available not only for electric wires and cables, but also for parts of mechanical construction of various kinds where strength is required and where it is desirable to have the parts as light as possible. No information is given about the composition of the new metal, but it is said to be made by an electrical process at a cost of about 15 cents per pound.

Marcus T. Hitchcock, the inventor of a car-ventilating system which has been in almost general use for the last thirty-five years, died at his home on Boylston Street, Boston, Mass., November 23, 1903. He was 86 years of age, and had not been actively engaged in business for some years, but his health had been good until a few days prior to his death. His father was one of the "minute men" of the revolution, and resided at Springfield, Mass., where Marcus Hitchcock was born and reared. His inventive genius cropped out early in his youth, when he was employed at a milling machine in the Springfield arsenal. The machine not suiting his purpose, he improved it, and the improvement was soon adopted and a number of other machines built according to his suggestion. He afterward became master car inspector for one of the railroads of the New England States, and while working in this capacity he designed the ventilator bearing his name. He was also the inventor of a smoke-burning device, an apple dryer, and a number of similar things.

Leonard Henkle, the man who originated the Rochester lamp, which is now in use all over the world, died almost in poverty at Rochester, N. Y. He was also the inventor of features of other lamps, but none attracted so much attention as the Rochester. He was born on May 15, 1834, and much of his time is said to have been spent in fostering various schemes, most of which had for their objects the uplifting of his fellow man. Many of these were visionary and but few of them received any support from those whose interest he endeavored to enlist, because of the absence of pecuniary rewards. In many respects Mr. Henkle was far ahead of his time, and he is said to have been the first person to suggest the idea of a great power plant driven by the Falls of Niagara. He spent considerable time in traveling among the cities of New York in the vicinity of the Falls and endeavoring to get them enlisted in a great industrial movement having for its object the utilization of the Falls, but this was considered far from practical at the time, and he was laughed at for his trouble. The old man lived to see the greatest power plant in the world in operation at this point, but the project was brought about on lines very different from those suggested by him.

The latest development of the car-fare register consists of a device which makes a printed and detailed record of the business of each trip made by the car and gives the totals for the day. This report is made on a sheet which can be filed away for future reference and the value of such a record is apparent to anyone acquainted with the street railway business. Such a report, it is said by the inventor, will do away with the possibility of disputes between conductors and railway officials involving the business done. It not only makes a visual record of every fare as it is paid, just as do the registers at present in use, but also makes the permanent record of such matters as the number of full fares, number of half fares, and the tickets of various kinds; also the number of the conductor who may have been in charge of the car on each particular trip, and finally, the number of the inspector or other official whose business it may have been to take the printed sheet from the machine. The record of the conductor is secured by making the machine inactive until an individual key supplied to the conductor has been inserted in its proper place. The conductor must do this when he takes charge of the car, withdrawing the key when he leaves it. In order to unlock the machine the succeeding conductor must make use of his own key, and thus the change of responsibility will be made apparent. This machine is the invention of Will I. Ohmer, of Dayton, Ohio.