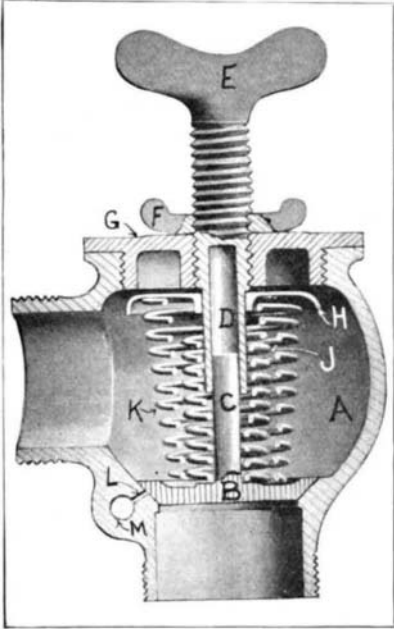


VAPORIZER FOR INTERNAL COMBUSTION ENGINES.

By an improved construction and arrangement of parts Mr. O. B. Perkins, of Gloucester, Mass., has provided a vaporizer in which the ratio of the air and fuel in the explosive mixture will remain the same, notwithstanding that the volume of the mixture may be varied considerably according to the adjustment of the vaporizer. The construction of the vaporizer can best be understood by reference to the accompanying illustration. A valve *B* works on a seat in the shell *A*, and is adapted to be engaged at every suction stroke of the engine to admit gasoline and air. The stem *C* of the valve slides freely in the hollow shank *D* of the



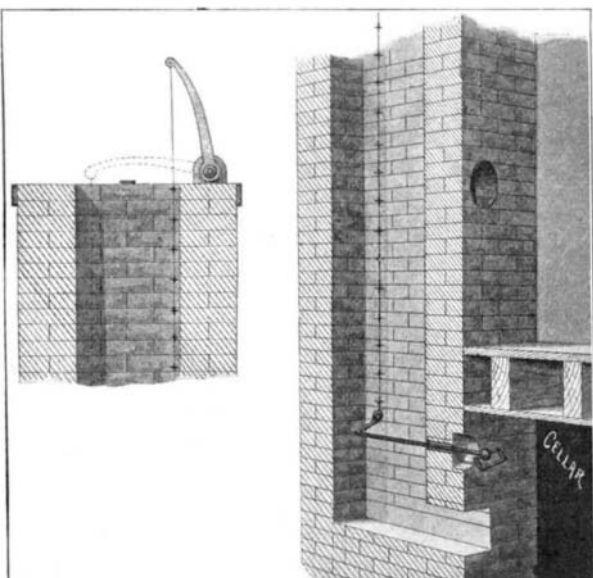
VAPORIZER FOR INTERNAL COMBUSTION ENGINES.

adjusting screw *E*. This screw is threaded through the head *G* of the vaporizer, and is provided with a lock nut *F* to hold it firmly at any adjustment. At the top of the shank *D* is a plate *H*, and pressing against this and the valve is a spring *K*, while within this spring is a shorter one *J*, which does not normally engage the plate. The gasoline supply pipe is shown at *M*, the inlet port *L* being normally

closed by the valve *B*. In the operation of the vaporizer, after the gasoline supply is adjusted, to run the engine full speed the screw *E* should be moved upward, placing the spring *K* under minimum tension, and thus the valve *B* will be lifted at every inception of the suction stroke, and the gasoline and air will be drawn into the cylinder throughout the whole of the stroke, thus attaining the maximum charge. This may be slightly decreased by increasing the tension of the spring *K* without, however, bringing the spring *J* into action; but to merely slow down or throttle the engine, the screw *E* and plate *H* should be moved down until the spring *J* is placed under tension. This increased pressure on the valve will prevent it from lifting until a material part of the suction stroke is traversed, and the result is that the cylinder will be charged only during part of the suction stroke. The quality of the combustible mixture is, however, unchanged.

A SIMPLE CHIMNEY FLUE CLEANER.

A patent recently granted to Mr. J. A. Stine, of Manistee, Mich., covers the invention of a chimney flue cleaner of novel and very effective design. The cleaner is installed as a permanent fixture in the chimney and is ready for use at any time. The device is illustrated in the accompanying engraving, the small view at the left showing the top of the chimney. As will be observed, the chimney cleaner comprises a chain or wire rope hung from an arm at the top of the chimney and secured to a shaker at the bottom of the flue. At frequent intervals throughout its length, the chain is provided with disks of cast or malleable iron, which are adapted to scrape the soot off the chimney walls. The arm at the top of the flue is mounted in bearings projecting from a metal band



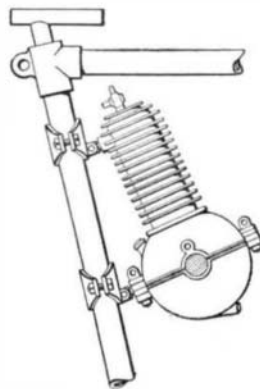
A SIMPLE CHIMNEY FLUE CLEANER.

which surrounds the top of the chimney and thus affords a firm support, at the same time preventing the bricks from working loose under action of the weather, or the operation of the cleaning device. The chain supporting arm is normally held in the position illustrated by coil springs on the journals.

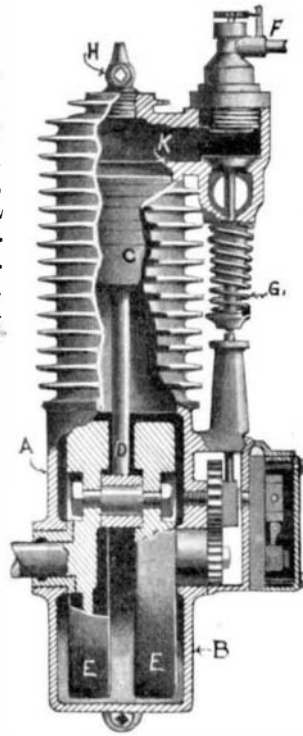
The cleaner can be very easily operated. The shaker rod at the bottom of the flue is turned, drawing down the chain and scrapers against one or the other side of the flue depending upon the direction of turning the shaker rod. When the chain is drawn down the arm above swings to the position shown in dotted line carrying the cleaner chain from one side to the other of the chimney, the lower end of the chain can be similarly moved by operating the shaker rod in and out of the flue. In this way every part of the chimney can be reached by the scraper disks. The disks are quite small, being less than an inch in diameter, so as to easily clean out the corners of the chimney. If objection is made to the appearance of the arm on the chimney top, this may be easily drawn down out of sight by turning the shaker rod and fastening it in this position.

ENGINE FOR MOTOR BICYCLES.

Mr. Maurice Pivert, of 1714 Saratoga Street, New Orleans, La., has recently invented an engine so arranged that it can be conveniently mounted on the frame of a motor bicycle. The engine itself is particularly adapted for rough use, having a very durable construction and being completely dust-proof and not liable to leak or get out of order easily. As shown in our illustration, the casing *A* is made of a single casting, the open end being closed by a cover *B* bolted thereto. The joint is made dust-proof by a gasket compressed between the adjacent edges of the casing



METHOD OF ATTACHING THE MOTOR.



ENGINE FOR MOTOR CYCLES.

and cover. The upper portion of the casing forms a cylinder in which the piston *C* reciprocates. This is connected by a pitman *D* with a wristpin extending between the flywheels *E*. At the upper end of the cylinder there is a side chamber for the admission and exhaust valves, *E* and *F*. The spark plug projects into this chamber between the valves, but is not shown in our illustration. The spark plug is protected from the splashing of oil or dirt, due to the action of the piston, by a shoulder *K* which projects outward over the piston at the top; the sparking plug is thus kept clean, and properly functions at all times. A compression cock *H* is screwed into the cylinder at the top. Near the top of the casing an eyebolt is secured, and this, together with a similar eyebolt formed on the side of the casing at the bottom, affords means for mounting the engine securely to a bicycle frame, as shown in the outline illustration. The engine may also be secured in other convenient positions, as will be readily apparent to our readers.

British Inventiveness.

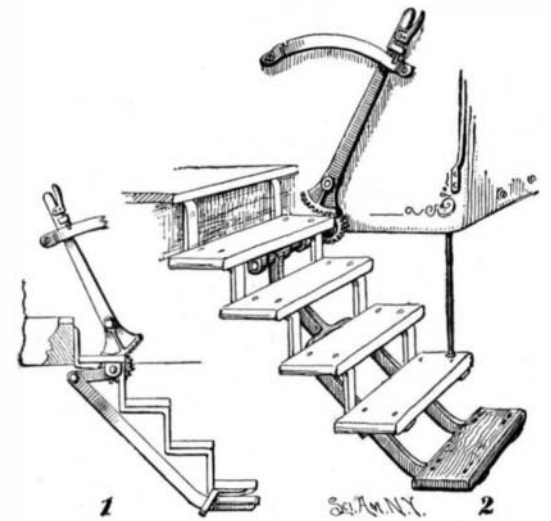
The annual report of the Comptroller-General of Patents states that the number of applications for patents in 1902 was 28,976, compared with 26,777 in 1901, while 8,510 complete specifications were filed after provisional specifications, compared with 7,622 in the previous year. In all, 37,846 specifications were received against 34,410 in 1901, and 13,764 were sealed, an increase on the year of 102. The number of applications by women was 609, of which about two hundred were connected with articles of dress and 127 related to cooking and domestic economy. Of the applications received 17,627 came from England and Wales, 3,549 from the United States, 2,866 from Germany, 1,459 from Scotland, 1,001 from France, 376 from Ireland, and 176 from Canada. A large increase is noticeable in patents for motor-cars, the improvements claimed being chiefly in connection with the

driving and other gear and the arrangements of the cars themselves. Much attention was directed, as in the previous year, to wireless telegraphy, and other favorite subjects of invention were golf balls and clubs and reversible outside seats for tramcars. The fire in the city of London on June 9, 1902, on the premises of the General Electric Company, Ltd., whereby ten lives were lost owing to the insufficient length of the escapes, led to a large increase in the applications for fire-escape patents, but this only lasted for a short time. So far as can be judged by the titles of applications, the coronation, with its accompanying events, did not appreciably affect the course of invention.

The number of designs applied for during the year was 17,825, against 16,934 in 1901, and of this number 17,106 were registered, against 16,217 in the previous year. The figures relating to trademarks also showed an increase, being 8,899 applications and 3,404 registrations, against 8,775 and 3,246 respectively in 1901.

ODDITIES IN INVENTIONS.

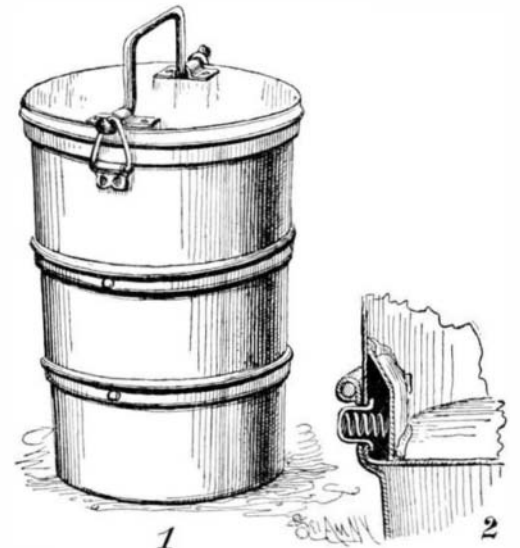
ATTACHMENT FOR CAR STEPS.—The lowest step of a railway car, while properly placed for depots having



ATTACHMENT FOR CAR STEPS.

raised platforms, is entirely too high for the platforms of most stations. On this account the trainmen of the more important trains are obliged to carry a cricket or portable step, to assist the passenger in mounting or dismounting from the first step of the car. An inventor has recently improved upon this primitive system by providing a car step which may be lowered for use or folded out of the way according to requirements. The step is shown in Fig. 1 in its retracted position, which is maintained while the train is in motion. When the train reaches the station, the trainman throws a lever outwardly, which operates through a simple mechanism, such as that illustrated, to thrust the step forward into position for passengers in mounting to reach the fixed steps without undue effort.

NESTABLE PAIL.—A resident of Buffalo, N. Y., has invented a pail which can be increased in capacity at will by simply adding to it any desired number of pail sec-



NESTABLE PAIL.

tions. Each pail section is virtually a complete pail in itself. The upper end of each section is formed to overlap the bottom of the section above. Near the bottom of each section, and placed diametrically opposite each other, are two spring buttons, which are adapted to snap into corresponding openings in the overlapping portion of the pail section below. The pails may be easily detached by pressing these buttons inward. A cover is provided for the uppermost pail sections, to which a handle is attached. Fastening devices are secured on the pail, which may be snapped over the projecting ends of the handle, which may then be used to lift the assembled pail.