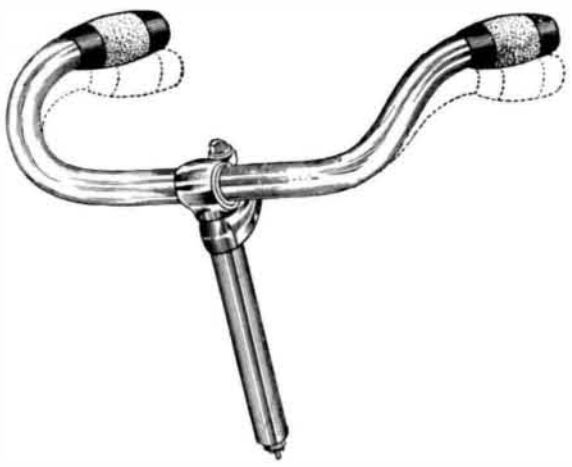
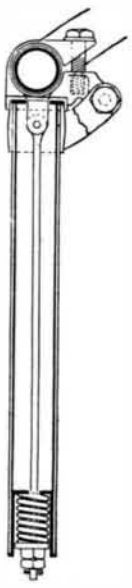
A SPRING-SUPPORTED HANDLE BAR.

The bicycle rider generally finds that in riding over rough roads the most tiring effects are those which come from the jarring and jolting communicated to the body through the handle bar. This very commonly causes numbness of the hands or forearm, and the striking of some special obstruction often sends a shock through the entire body. It is on this account principally that the wooden handle bars have met



THE ROBINSON SPRING-SUPPORTED HANDLE BAR.

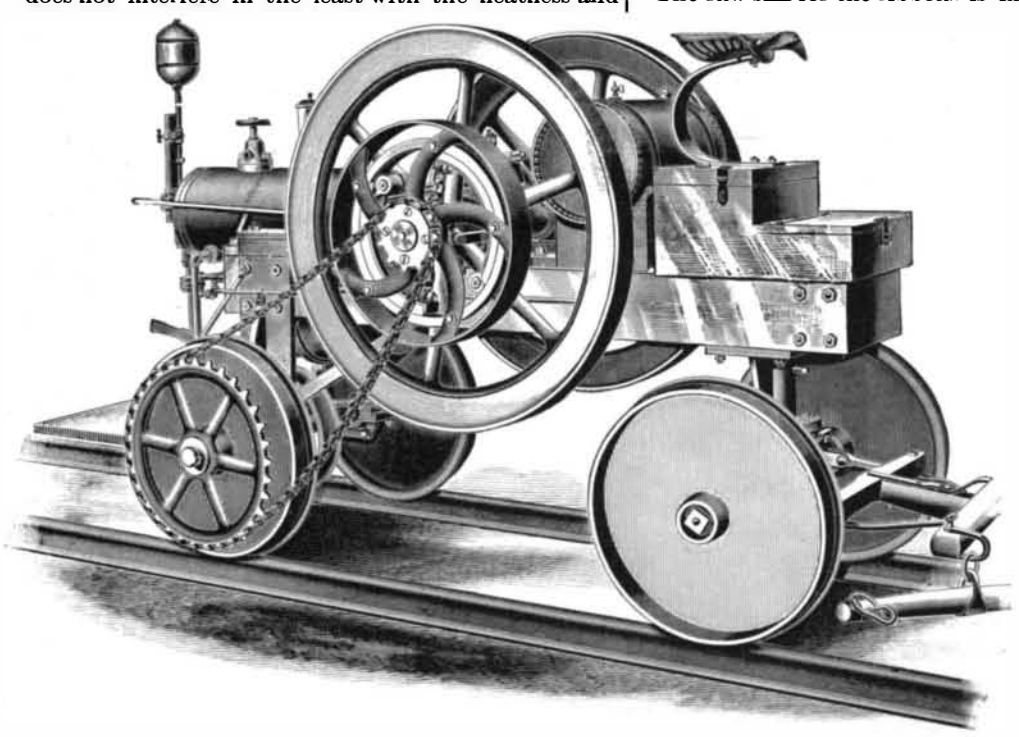


with favor, as being more resilient and "springy" than those made of metal, but the amount of added elasticity thus obtained is an undefined quantity, and cannot be made greater or less as may be desired, according to the weight of the bicyclist or his manner of riding. To overcome these objections, the spring-supported handle bar shown in perspective and in section in the accompanying figures has been invented and is being introduced by William Robinson, of the Devonshire Building, Boston, Mass. It was exhibited at the Boston bicycle show in February, and elicited general approval.

The handle bar proper has at its center an independent bracket, and the handle bar stem is similarly provided at its top with a bracket, the two brackets being hinged together to form a fulcrum, as shown in the sectional view, the hinge coming between the inwardly curved ends of the bar, or toward the rear of the machine. On the handle bar bracket is a lug projecting down into the tubular stem, and to this lug is hinged a rod at the lower end of which is a spiral spring bearing against an annular shoulder within the stem, there being nuts on the rod below the spring by means of which its initial compression may be adjusted as desired. As the weight of the rider is thrown suddenly, or resting normally, upon the handle bar in riding, the bar moves slightly upon its fulcrum, the spring absorbing the vibrations and the handle portions yielding as indicated by the dotted lines, thus obviating all shock and jar on comparatively smooth as well as on the roughest roads. This bar yields only to downward pressure, and in lifting, as in hill climbing, it is rigid—unlike the wooden handle bar, which is equally elastic in all directions. The spring is adjustable to any weight of rider, and the bar itself is adjustable in its bracket, and may be easily reversed, giving either an up or down curve to the handle bar. The construction described does not interfere in the least with the neatness and beauty of the handle bar, which is exceptionally handsome.

A SEMI-TRACTION GASOLINE ENGINE.

The illustration represents a novelty in traction engines, being a gasoline semi-traction engine which was last month shipped to Yucatan, for running a stone crusher and for use upon a tramway several miles long, upon which, however, it will be self-propelling in one direction only, having a tongue and attachments for hauling by team. It was built by the Charter Gas Engine Company, of Sterling, Ill. It has flanged wheels for use on the track, but the flanges are so low that they do not cut in very much when used on the road. The propulsion of the engine in one direction by its own power is effected through the sprocket chain connection of the main shaft with a sprocket wheel on one of the axles, as shown in the illustration. This engine has the general features of the Charter gasoline engine, which has been many years on the market, the use of gasoline direct from the tank being so controlled as to secure perfect immunity from danger of fire and explosion, while unaffected by changes of weather and temperature. The driving pulley is a friction clutch pulley, simple in construction, and with means for taking up the wear of the clutch shoes, which are lined with hard wood. The machine that is being operated can be stopped and started at will, while the engine continues to run. Mufflers for the exhaust reduce the noise, so there is not as much as is made by the steam engine exhaust. The gasoline tank has capacity for over a day's consumption, and is shown in the cut.



THE STERLING GASOLINE SEMI-TRACTION ENGINE.

Cigar Ribbons.

One New York firm alone turns out yearly an average of more than $200,000 worth of cigar ribbons and on these employs nearly 500 hands, says the New York Sun. Until 1868, it is said, cigar ribbons were not manufactured here. The use of silk ribbons to tie up cigars originated in Cuba. The Spaniard's patriotism impelled him to choose the national colors of red and yellow, and at the present time these two colors, separate or in combination, are still the favorites. The first ribbons were made in Barcelona and were the rich crimson-scarlet, known as the Figaro, the vivid yellow of the Cabanas and Partigas, and the red and yellow of the Española.

The first domestic ribbons made were of cotton, of a pale yellow, with a brown stripe running down the center, and this was speedily followed by a ribbon made wholly of silk. In 1868 a cigar manufacturer in this country conceived the idea of having his name printed on the silk ribbon, which had hitherto been plain, and also the shape of the cigar. This was at first done in black, then in colors, and eventually in silver and gold, with embossed work and coats of arms. Then the name was woven into the ribbon instead of being printed. Woven ribbon is very valuable as a trade mark, since it is impossible to duplicate it in small quantities.

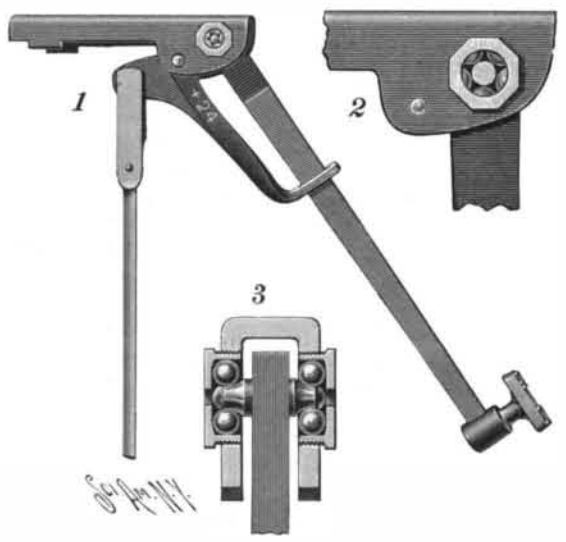
In 1868 the first ribbon factory was established in this country by a man named Wicke, who established a small factory near the East River. It was operated by two Swiss. The demand for the ribbon increased, and in 1870 the profits were so good that a four-loom factory was started and operated by Swiss weavers especially imported. Only two widths of what is termed "Londres" ribbons were then made. In 1887 there were more ribbons used in proportion to the total number of cigars manufactured in this country than in any other year, and since then the bundling of cigars has steadily decreased in favor of the system of packing twenty-five or fifty in a box without ribbons.

The raw silk for the ribbons is imported direct from Japan and China. There are ninety-four styles of cigar ribbons made, varying in width from one-eighth of an inch to an inch and a half. United States ribbons are sold in Canada in preference to the English make, although the duty on our goods is heavier. Some of the machinery is very interesting, especially that used for weaving in the name of the firm in black.

Some years ago the general public was bitten by a cigar ribbon fad and many ribbons were sold by cigar dealers to make lambrequins, sofa cushions, etc. A woman in New Haven made a table mat of 450 separate ribbons and it fetched $160, while a cushion made by a cigar manufacturing firm as a compliment to an actress, whose name was used as a trade mark, cost $250 simply for the needlework and time expended on it.

THE DENSMORE TYPEWRITER BALL BEARING TYPE BAR JOINTS.

One of the latest to be introduced and one of the most valuable of the improvements which have marked the history of the Densmore typewriter is the ball bearing type bar joint shown in the accompanying illustration. Fig. 1 is a side view of the type bar and its hanger, with the depending key rod, and Fig. 2 is a larger view of a portion of the hanger, both views showing the five balls contained in the ball case on one side of the type bar pivot. A longitudinal sectional view of the type bar joint is shown in Fig. 3, there being five balls on each side of the pivot, and the joint thus has ten of these hardened balls. The arrangement prevents wear at the bearings, upon which perfect alignment and durability of a machine chiefly depends. The key rod, as will be seen, is pivotally connected with the short arm of a compound lever pivoted adjacent to the type bar joint, while the longer arm of this lever embraces and slides on the type bar during the stroke, as one's hand slides on an ax helve in chopping, thus gradually overcoming the inertia of the type bar. The gradually accelerated speed and force thus obtained, with the least effort of the operator, account for the very light stroke of the Densmore typewriter, while the compound lever and its bearings receive all the lateral strain, so that there is practically no wear or play. The ball case is adjustable, but is screwed very firmly into place, and will rarely need taking up even after long use. There is shown in the window at the main office



THE DENSMORE TYPEWRITER BALL BEARING TYPE BAR JOINTS.

of the Densmore Typewriter Company, 316 Broadway, New York, a type bar and connections complete of heroic size, the type bar being eighteen inches long and the balls nearly half an inch in diameter. The hangers are numbered, each hanger having tenons which fit accurately in mortises in the top of the frame, where they are firmly screwed in place, and this, with the delicately exact construction of the type bar joints, gives the machine an accuracy of alignment which does not depend upon the occasional adjustments of a repairer, but which must stay, because the type bar joints do not wear out and the hangers cannot become unadjusted.

The Densmore has comparatively few parts, is of light weight and easy to operate and very convenient to handle or carry. It has attained its great success from the thorough excellence of its manufacture and the many advantages and conveniences it possesses.

Carborundum Production and Use.

The Carborundum Company reports to us that its works have produced during the year 1896, in round numbers, 1,191,000 pounds, or 595¼ tons, of crystalline carborundum, says the Engineering and Mining Journal. Consideration at the present is given to the production in crystalline form only, but another important industry in which carbide of silicon promises to be a valuable adjunct will naturally increase the usefulness of the material. Some mention has been made of the experiments showing that carborundum can be used, and will, in all probability, take the place of ferro-silicon in the manufacture of steel. Prof. Luehrmann, of Germany, recently wrote an article on this subject, indicating that in the use of carborundum there will be in Germany alone, approximately, 2,500 tons consumed annually, provided its cost would not exceed six cents per pound. It may be used for this purpose in an amorphous form, and the Carborundum Company is prepared to furnish it at a price slightly under this figure.