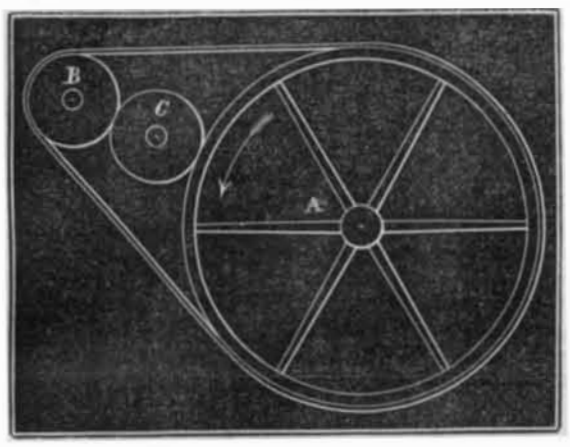
INTERMEDIATE BEARING PULLEY FOR SHORT BELTS.

It not unfrequently occurs that pulleys, the driver and driven, must be placed very near together, necessitating a short belt, which, whether for efficiency or durability, is not economical, as the belt must be kept very tight. Especially is this arrangement objectionable when the driver is very much larger than the driven. We give an illustration of a device

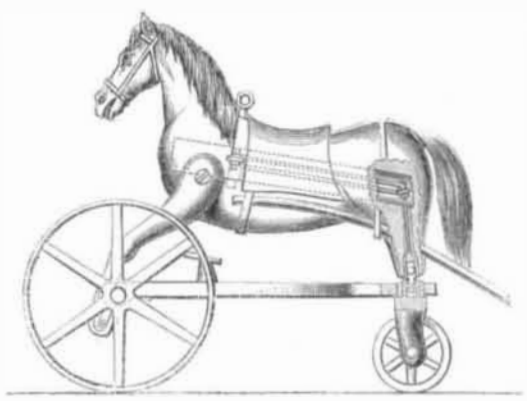


for obviating this annoyance, which we see in *Engineering* applied to a portable centrifugal pump. The driver, A, revolves in the direction of the arrow, carrying a belt to the driven, B, and between the two is interposed a friction wheel, C, bearing equally on the faces of both pulleys. The face of this intermediate is hollowed so that it bears on the outer edges of the pulleys. Its effect is to relieve the great strain on the shaft of B.

PROGRESS OF THE VELOCIPEDE.

Parties interested in the manufacture of velocipedes have recently been called upon by Calvin Witty, of this city, to arrange with him for the right to build velocipedes, such as embrace the devices for propelling the vehicle, as shown in Lallement's patent, illustrated on page 102 of the SCIENTIFIC AMERICAN. A new claimant has entered the field in the person of Stephen W. Smith, of this city, who claims that the so-called French velocipede is an American invention, perfected in this city, and introduced into France by patent, and personally by himself.

It appears by reference to the Patent Office Report of 1862, that P. W. MacKenzie, a citizen of the United States, patented a "cantering propeller," which illustrates a hobby horse mounted upon wheels, as shown in the accompanying engraving. The patent has recently been reissued for the pur-



pose of widening the claims, so as to cover the whole ground occupied by the patent bicycle of Lallement. The reissued claims are as follows:

1 claim, in combination with a saddle seat for the rider, the employment and use of a cranked axle, arms, and foot-rest, so arranged that power applied by the feet of the rider shall give motion to the vehicle, substantially as described and specified.

2. The combination of the following elements, namely, a saddle-seat for the rider, a cranked axle for propelling the vehicle by power applied by the feet of the rider, and a steering mechanism, so constructed that the direction of travel of the vehicle may be governed by the rider, substantially as described and specified.

3. The universal joint, in combination with the fulcrum of the vehicle and the steering wheel, constructed and operating substantially as and for the purposes specified.

4. The hinged legs in combination with the body of the horse, and with the cranks, substantially as and for the purposes specified.

5. The foot-rests upon the arms, substantially as and for the purposes specified.

6. The double-armed levers and diagonal cords in combination with the handle and steering wheel, substantially as described and specified.

It will be seen that the first and second claims are intended to embrace, and do embrace so far as words can accomplish it, the essential elements of the velocipede now in use. It remains to be determined by the courts how far the rival claimants clash with each other. The fight begins to assume an interesting aspect, and it may be that other old patents will be reissued to enter upon the contest.

There is no dearth of velocipede incidents and inventions. In fact, from indications we are inclined to think that inventive genius will not leave a stone unturned till this little vehicle has reached perfection as nearly as any human device can be supposed to approach it.

An invention has been made by a Western gentleman which may be attached to any two-wheeled velocipede, enabling the rider to propel either with the hands or feet, or both. This invention will make a five-foot driving wheel practicable, without raising the saddle too far from the ground.

Rev. Arthur Edwards, Assistant Editor of the *Northwestern Christian Advocate*, said to be a most expert velocipedestrian, has had rubber tires put upon the wheels of his "Pickering," and finds it practicable by their use to ride over ice and snow without slipping. He believes that their use would be advantageous in summer as well as in winter, as the rubber would relieve the jar from roughness of roads.

An exchange asserts that among those that distinguished themselves as velocipedists in England thirty years ago was Michael Faraday, the chemist, who frequently drove his machine through the suburbs of London.

The police had a battalion drill the other day at the Twenty-second regiment armory in New York. There were a number of velocipedes around, and one of the "boys in blue" and brass, believing himself an expert on the thing, got on one of them and started on a run. For about ten paces it went very well, and the policeman gaining confidence, gave the crank a more violent push, and up went the velocipede and down went the policeman, and while he was standing on his head, his feet cutting the air furiously, the velocipede, as if in mockery, turned a somersault over him and ran away.

Our sister city Brooklyn, is showing an enterprise in velocipede matters decidedly characteristic. It is announced that the managers of the Prospect Park Driving Association, of Brooklyn, have made arrangements to signalize their first annual spring meeting with a grand velocipede tournament, by which they intend to inaugurate a series of bicycle contests on their handsome course during the ensuing summer. A feature of the Parisian racing meeting now is the velocipede races, and they have proved far more attractive and exciting than even the turf meetings. The Prospect Park Association Course is a level one, and just suited for velocipede riding, and it is to be specially prepared for the races in question, the velocipede contests taking the lead of the horse races on the course of the coming spring meetings.

It is intended to make this tournament an exhibition of velocipede riding unprecedented in this country, and as the list of entries will be open to all comers, there will of course be considerable competition. The highest rate of speed reached on a Parisian course has been a mile in 2:14, but this was done only on one occasion, and has not been equaled since. A mile in three minutes is very fast time.

The races will be governed by a special code of rules, which will include handicapping for weight of machines and riders, diameter of driving wheels, and extent of treadles. The amount which will be presented in prizes will reach $1,500. There will be first, second, and third prizes for the greatest speed; prizes for best time made, and prizes for slow riding. The tourney will afford not only an excellent opportunity for a display of skill in American velocipede riding, but also a fair chance to show off the merits of the different styles of velocipedes. There is no doubt of the fact that the races will create an excitement, and we should not be surprised to see 20,000 people there.

All those intending to enter the lists should at once set to work to get themselves in training by practicing road riding. It will be found to be no child's play to run a mile race on a velocipede against a well-trained proficient, and therefore plenty of practice should be had by all of our leading experts who desire to enter the lists. The tournament will take place the last of April. We shall give due announcement of the details of the programme as soon as the managers have prepared it.

Mr. Cuyler, the Engineer in charge of Prospect Park in Brooklyn, announces, officially, that the velocipede riders have been and are permitted to make use of the walks of the Park, and are also allowed to use the tarred area or plaza and walks at Fort Green. The question of the general use of the Park by velocipede riders has not, as yet, been officially acted upon.

From the above it will be seen that velocipedists can avail themselves of all the privileges in Prospect Park granted to equestrians, for they can use all the bridle paths and plazas in the Park.

The Brooklyn *Union* of March 4th says that "Palm Johnson, the noted Brooklyn skater, returned from Paris last week, and he informs us that not only have we better velocipedes here than they have in Paris, and greater facilities for practice under cover, but that the most expert riders now in Paris are Americans. He says that the Parisians would be astonished to see the beautiful machines our Broadway makers turn out."

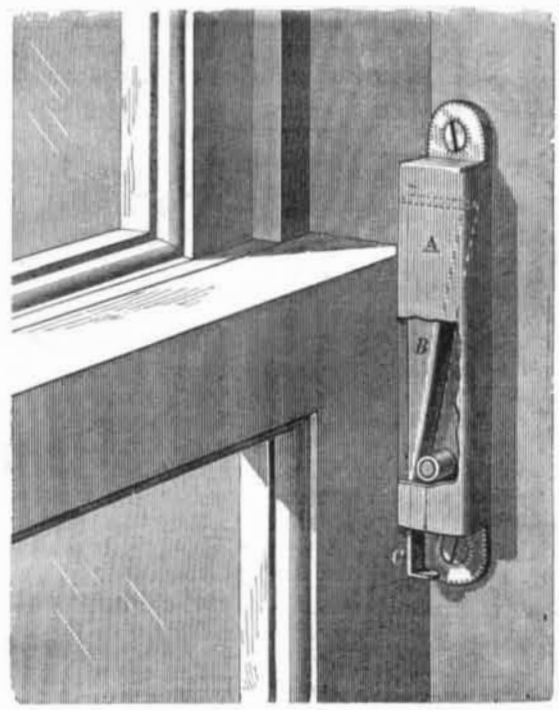
The bicycle has been introduced into gymnasiums, for ladies' exercise who use the dress commonly used by them in calisthenic exercise. The fair ones who have learned to manage "the beast" are in transports, and a rush is the consequence of the new attraction. Gentlemen are excluded while the ladies practice the art, but a few Benedicts who have been permitted to look behind the scenes while their better halves were performing on their fiery untamed steeds, say that they make a very pretty and graceful appearance. We can see no valid objection why ladies should not adopt a special dress for this sport, and enjoy it in the open air, instead of close and confined rooms. What say our *modistes*.

A correspondent from Poughkeepsie writes us that he has invented a machine in which both of the hind wheels are drivers instead of the forward one. They are three feet eight inches in diameter, and fast on independent axles meeting in the center, connected by a beautiful and novel arrangement of gearing, so that either wheel can stand as a pivotal point and the other be driven around it by the operator on the machine fast enough to make one's head swim. He says "I can turn it in less space than any other velocipede ever made. The leading or steering wheel is thirty-two inches in diameter, hung upon a swivel (as the front wheel of the bicycle) with the tiller, which has a cross handle running back to the operator, and is jointed to the top of the swivel, extending forward and downward with a block or rubber on the end, so that by lifting up on the tiller the rubber is brought in contact with the wheel and acts as a brake. I have for foot pedals two boards about thirty inches in length by five in width, suspended or jointed at the forward ends, and connected at the rear ends by rods running up to the vibrating levers which are pivoted on the axles; and are capable of being lengthened or shortened at pleasure, to get more or less power according to circumstances. To these levers are attached pawls which engage ratchet teeth on a wheel or cylinder which drives the axles. The levers are vibrating so that when one pedal goes down the pawl catches and moves the cylinder forward, at the same time the other lever is moved backward to continue the operation. These levers are so connected that they throw each other back. I have other foot levers fastened to the pedals, and standing vertically or nearly so, so that the operator, by sitting down and placing his feet against them, can drive the machine as well as by standing up."

HUTTON'S PATENT AUTOMATIC SASH LOCK.

On page 152, Vol. XVII, of the SCIENTIFIC AMERICAN, we published an article on the desirability of an improved window sash fastener, particularly for railway car windows. The one we herewith illustrate seems to meet this requirement perfectly, and is also applicable to other similar cases. It appears to possess in a high degree the qualities of simplicity, cheapness, durability, and effectiveness, beside being easily applied and not unsightly. No mortising or cutting of the window frame or sash is required, the paint or polish of the sash is not defaced or marred, and the device may be applied by any one who can use a screwdriver.

It consists of a case, A, of sheet metal, japaned, silvered, or gilded, held to the casing by two screws, as seen. Inside the case is a wedge-shaped key, B, also of sheet metal, clasping a



filling of rubber that projects slightly beyond the edges of the metal and bears against the sash. The side of the case, A, toward the sash, is open. The metallic back of the wedge key bears against a friction roller in the lower part of the case, and a portion of it extends below the case and is bent or formed into a thumb-piece, C. This thumb-piece is for raising and disengaging the face of the wedge or key from the sash when the latter is to be lowered. When it is to be raised nothing is necessary but to lift the sash with a force proportioned to its own weight only, as there is no friction in this direction from the wedge. For car windows it seems nothing could be contrived to answer the purpose better, and as it requires no particular effort to raise or lower the window and prevents the incessant rattling so annoying to the weak, ill, or nervous, we hope to see it generally adopted by steam and street railway companies.

If placed on the sash instead of the window frame it becomes a secure lock, preventing the opening of the window from the outside; it may be equally well applied to the upper sash; it costs only $18 per gross, and is susceptible of elegant external form and finish.

Patented through the Scientific American Patent Agency, January 1, 1867, by Robert Hutton, Brooklyn, N. Y. Orders should be addressed to the patentee, care "Waterbury Brass Company," First street, near Grand, Williamsburgh, N. Y.

The Invention of Lithography.

The impatience of a German washerwoman led to the invention of lithography. The history of that elegant art begins with a homely domestic scene, which occurred at Munich about the year 1793, and in which three characters figured,—Madame Senefelder, the poor widow of an excellent actor, then recently deceased; her son, Alois Senefelder, aged twenty-two, a young man of an inventive turn; and the impatient washerwoman just mentioned. The washerwoman had called at the home of this widow for the weekly "wash;" but the "list" was not ready, and the widow asked her son to take it. He looked about the room for a piece of paper upon which to write it, without being able to find the least fragment, and he noticed also that his ink was dry. Washerwomen are not apt to be overawed by such customers, and this one certainly did not conceal her impatience while the fruitless search was proceeding. The young man had in the apartment a smooth, soft, cream-colored stone, such as lithographers now use. He had also a mass of paste made of lampblack, wax, soap, and water. In the hurry of the moment, he dashed upon the soft, smooth stone the short list of garments, using for the purpose this awkward lump of oily paste. The washerwoman went off with her small bundle of clothes, peace was restored to the family, and the writing on the stone remained.—*James Parton in the Atlantic Monthly.*