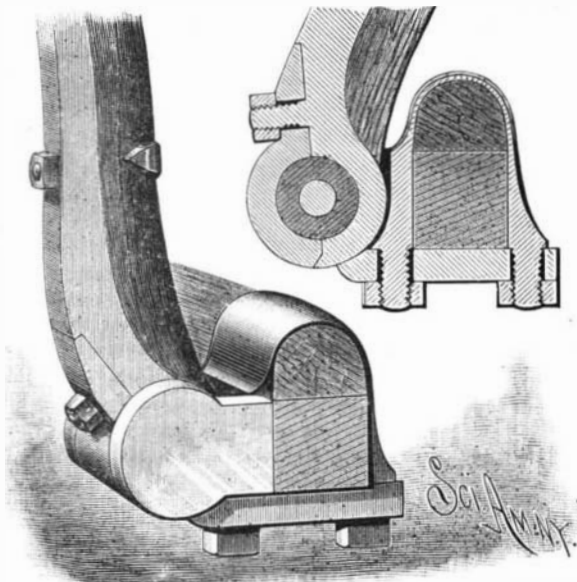


AN IMPROVED THILL COUPLING.

In the invention herewith illustrated, recently patented by Messrs. Peter T. McMillan and Hallet T. Hill, of Bay Shore, Suffolk County, N. Y., the thill coupling eye is made in sections to adapt the thill to be connected to the jack clip without removing the clip bolt or pin. One of our views is a sectional elevation, showing the thill elevated for detachment from the clip, and the other is a side view, with the curved end of the thill in the position in which it is held in the thill loops of a harness. The jack clip is attached to the bottom of the axle by a cross piece, which has a slight forward projection in contact with the thill eye, the clip also having forwardly extending cheek pieces holding an inwardly extending pin, seen in the center of the thill eye in the sectional view. In this view, also, is clearly

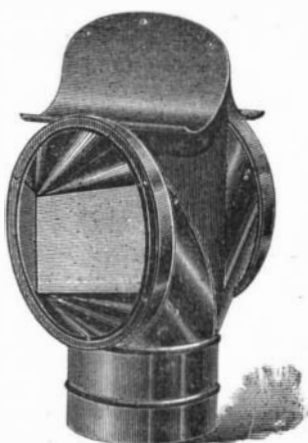


McMILLAN & HILL'S THILL COUPLING.

shown the manner in which the thill eye is formed in two sections, and the smaller section secured to the larger one, which is made integral with the thill iron. Between these sections and the pin is an annular rubber packing, which is compressed in position enough to prevent rattling. When the thills are in the normal working position, the lower joint of the sections forming the coupling comes within the projecting portion of the bottom cross piece of the clip, so that the projection forms a safeguard to obviate all danger of the section becoming accidentally detached; but when the thills are raised to the position shown in our sectional view, the joint is carried down, so the section may be easily removed, and the thills detached from the vehicle without removing the bolts or pins from the jack clip.

AN IMPROVED VENTILATOR.

The chimney cap or ventilator shown in the accompanying illustration is the invention of Mr. Hiram F. Henry, of Gowanda, N. Y., and for which he has recently received letters patent. It is constructed in such a manner with caps over the openings that the wind is prevented from blowing down the pipe or opening, while, at the same time, there is nothing to prevent the free exit of the heated air and the products of combustion, there being a free and unobstructed passage upward. While thus preventing storms and winds from taking a downward current, it keeps up a constant draught in the flue or pipe, utilizing to that end



THE HENRY VENTILATOR.

the motion of the air, from whichever direction it may come. The cones at the ends of the branches, together with the saddle or deflector (which may be used if desired), deflect the wind so as to cause it to pass over the space between the cones and the ends of the branches, thereby increasing the draught and producing a steady current of air.

THERE was recently unearthed at Jacksonville, Ill., while excavations were being made for the asylum for the insane, an apple which is believed to have been buried fourteen years. The apple was in good condition considering its age.

THE RUDGE BICYCLETTE.

Of the various forms of outdoor exercise, it is now generally admitted that 'cycle riding is one of the most healthful and delightful. The movement of the lower limbs in driving the pedals, the gentle force given by the arms in steering, and the constant undulations of the body with the motions of the vehicle, result in a rapid and general strengthening of the system; while the mere act of riding in the fresh, open air, amid constant changes of scene and prospect, brings on a peculiar cheerfulness and exhilaration of spirits that compensate a thousandfold for all the bodily exertion involved.

Those who have been deterred from the pleasures of 'cycle riding by fear of accident on the high wheel will dismiss all their fears if they use the Rudge bicyclette, of which we here give an illustration.

It is safe in every respect, a header being impossible; the seat of the rider being so low, he feels as secure as when on his feet; in fact, his feet are only a few inches from the ground, so that if it were possible to fall, no injury would arise. The wheels are of equal size, the hind wheel being the driver by means of an endless chain, communicating from the hub to the pedals, which are situated between the two wheels. The front wheel is the steerer, so that the power required to propel the machine does not affect the steering, as in the ordinary bicycle. On this account, and the proximity of the rider to the ground, a learner can make himself master of the art of riding in a much shorter time, and with considerably less danger, than upon the ordinary bicycle.

As a runner on level ground, its speed fully equals the ordinary bicycle; and as a hill climber, it easily excels any type of bicycle, as this fact has been proved time and again.

Among other advantages claimed for this vehicle are the following: Perfect immunity from headers, very great brake power, easy mounting and dismounting, great power up hill, ease of working against head winds, little vibration and bumping, ability to ride where ordinary 'cycle or tricycle could not venture, no skidding when driving up hill, maximum of speed with minimum of exertion, comfortable foot rests, little splashing from mud and wet, saddle and handles raised at will.

For further information address Messrs. Stoddard, Lovering & Co., sole agents, 152 Congress Street, Boston, Mass.



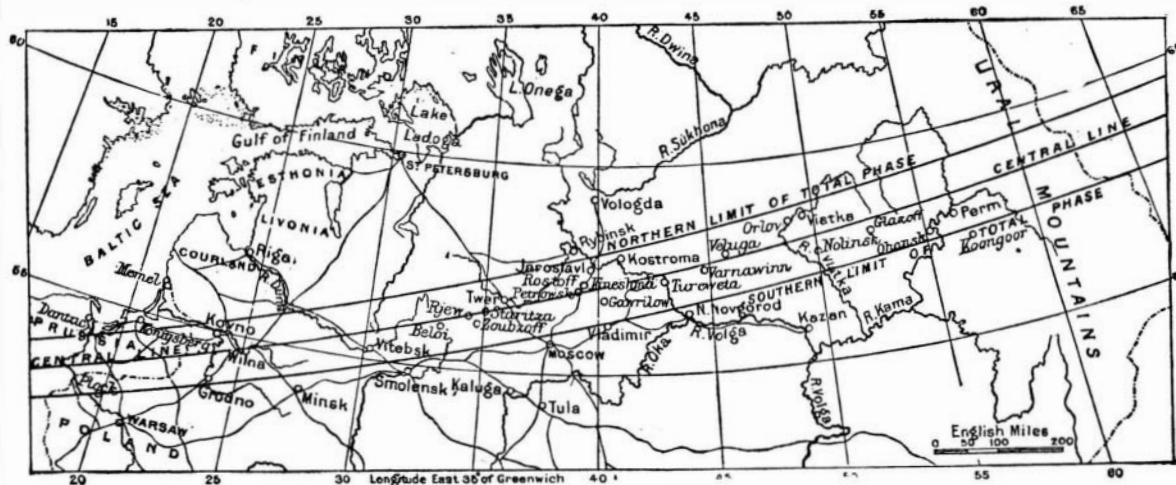
THE RUDGE BICYCLETTE.

THE TOTAL SOLAR ECLIPSE OF AUGUST 19, 1887.

The total solar eclipse of the sun which will occur on August 19 next, though only of average duration, will offer exceptional opportunities for observation from the circumstance that the track of the moon's shadow will be almost entirely a continental one, in striking contrast to the eclipses of the last four years, in all of which the shadow has followed a course which has been principally over the great oceans. The eclipse is technically a partial one for the principal part of Great Britain, but as it will be nearly over before sunrise, it will practically not be visible here. The middle

The sun will have an elevation of about 16° in this neighborhood, and the maximum duration of totality is not quite two minutes and a half. At Twer itself it will be only 124 seconds. Three parties—two German and one French—will take up positions within the government of which Twer is the capital. The second line runs from Moscow to Vologda, passing through Jaroslavl, which lies within but near the edge of the shadow. Petrowsk, on this railway, is very near the central line, and here the sun will be 2° higher than near Twer, and the duration 152 seconds. The third line runs to Kineshma, which is itself very near the central line. Here the sun will be about 20° high, and the total eclipse on the central line will last 156 seconds. It will not, however, be difficult to proceed to yet more favorable positions further east. From Moscow there is a line through Nijni Novgorod to Kazan, and a service of river steamers runs thence up the River Kama to Perm. Perm lies to the south of the central line, but the totality lasts there 173 seconds, while the sun is 28° high at mid eclipse.

If the weather should be favorable, Perm would be therefore a very suitable station for those astronomers who can spare the time to journey so far. For others, the neighborhoods of Petrowsk and Kineshma will afford readily accessible sites. Prof. Breidichin, director



PATH OF THE MOON'S SHADOW—ECLIPSE OF THE SUN, AUGUST, 1887.

phase will have been reached at sunrise for places a little to the west of Berlin; and this city lying within the path of the shadow, it is just possible that it may be favored with a sight of the phenomena of totality, though with a sun close to the horizon; for the sun will be largely obscured as it rises, and will not be quite 3° high at the end of the total phase.

From Prussia the shadow track passes into Russia, and the central line does not leave the borders of the Russian empire until it reaches east longitude 112°. It then crosses Manchuria and the Sea of Japan, and cuts the principal island of the Japanese group a little to the north of the capital. The final portion of its course

of the Moscow Observatory, has his own private observatory only two kilometers from Kineshma, and very close to the central line; and he has generously offered the hospitality of his house to the Royal Astronomical Society for two English astronomers—an offer which has been gratefully accepted by the society, on behalf of Dr. Copeland and the Rev. S. J. Perry. Prof. C. A. Young (of Princeton, N. J.) also will have his station here, and a strong party of Italian and English astronomers, consisting of Profs. Tacchini and Riccio and Messrs. Common and Turner, will be located at no great distance away, in the neighboring government of Vladimir.