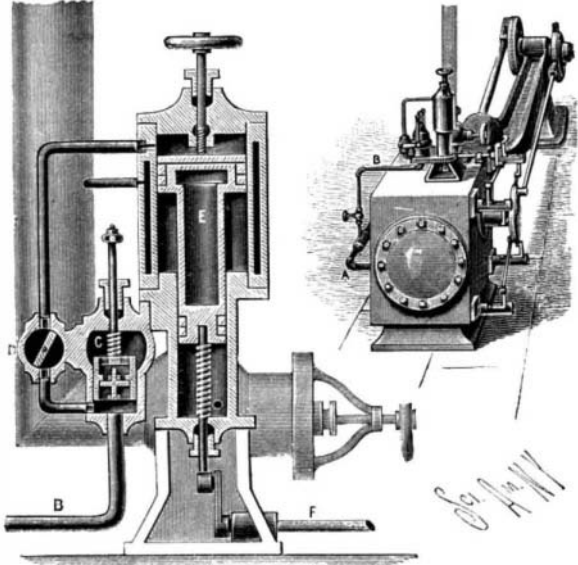


AN IMPROVED STEAM ENGINE GOVERNOR.

A governor which is positive in operation, and designed to admit steam quickly and in proper proportion to overcome the resistance of any load carried, as well as to shut off the steam and prevent undue increase of speed after release of the load, is shown in the accompanying illustration, and has been patented by Mr. Richard J. McIlhenny, of Wilmington, N. C. The ends of the engine cylinder are connected with pipes leading to a valve casing in which is a valve stem, sliding longitudinally on seats in the casing, and the latter is connected with a pipe, A, from which leads



MCIHENNY'S STEAM ENGINE GOVERNOR.

the valved pipe, B, opening into a cylinder containing an equalizing valve, C. The lower end of the latter cylinder is connected by a pipe, through the valve, D, controlled from the equalizing valve, with the upper end of a cylinder, E, containing a piston whose upward movement is limited by a screw rod. The piston has on its under side a piston rod extending into a cylinder of less diameter, connected by a pipe with the steam supply pipe, while the stem of the piston rod, extended through a stuffing box, is connected with a crank arm on a shaft, F, carrying arms connected with valves regulating the supply of steam. The equalizing valve is provided with an auxiliary valve, which permits the steam to escape from above the valve at the time the engine cuts off and steam is expanding. By this improvement the initial pressure in the engine cylinder operates a piston which controls the movement of the steam inlet valve. The cylinder of the governor is preferably steam-jacketed, as shown in the sectional view, and the governor is intended to be set on top of the engine cylinder, as shown in the small view in perspective. The device is designed to be equally applicable to high or low pressure, stationary or marine engines.

THE PENDULINE TITMOUSE.

Of all the titmice of France, this, with the whiskered panurus, is the rarest and least known; and it is for this reason that we devote the present article to it.

The under side of the head, the throat and the neck of the male are white, sometimes grayish. The lower part of the back and the tail coverts are of an ashen russet. The breast is gray, variegated with rose color; the forehead and the cheeks are of a brownish black; the remiges and the retrices are blackish, bordered with reddish white; the eye is brown; the bill is of a more or less pronounced black, and the feet are gray.

The female differs from the male in color only in her lighter tints and in the less extended black of the cheeks.

This charming little bird, which is only four inches in length, is remarkable for its vivacity, its agility, and its boldness, but it is at the same time so wary that it incessantly conceals itself from the eye of the hunter and is with difficulty taken in traps.

Temminck, who established three divisions in the genus *Parus*, placed the bird under consideration in that embracing the inhabitants of river banks. It is, in fact, upon the sides of ponds and amid reeds that it exclusively lives, and it is never met with in any woods except those that are situated in marshy places. It lives among reeds, of which it eats

the seeds. It also feeds upon insects and their larvæ. As active as the other titmice, it suspends itself from the reeds and hides itself among them so completely that its cry is often heard without the bird itself being perceived.

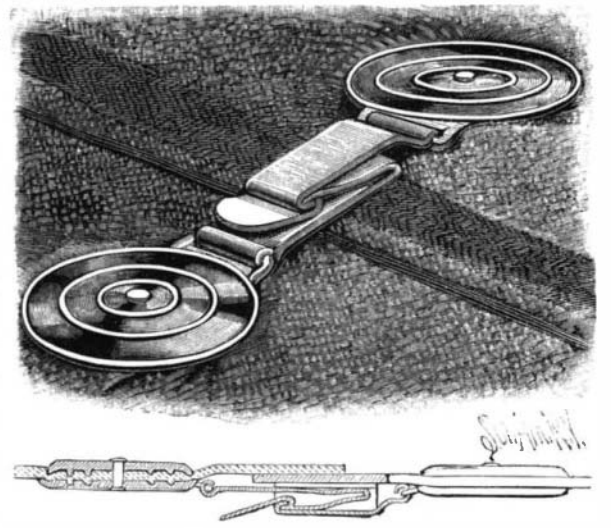
In autumn, the birds congregate in small flocks of from three to six individuals, but stop only in humid places. The art that this bird introduces into the construction of its nest has for a long time attracted the attention of naturalists. "I have given it," says Buffon, "the name of *penduline*, which represents to the mind the construction of its nest." This nest, in fact, is the most curious of any of those of the rest of the birds of France, and can be compared only to the nest of certain species of weavers of India and Africa; for it is shaped like a purse, is fixed by its upper extremity, and is suspended in most cases over water.

Baldamus (*Naumannia*, I., p. 50) gives a very accurate description of it: "The male and female display great ardor in constructing their nest, and yet it is difficult for one to understand how they finish such a work in less than two weeks. The bird begins by selecting a slender pendant branch having several bifurcations at a short distance from its point of origin. It surrounds this with wool or more rarely with goats', wolf's or dog's hair or filaments of bark. Between the branches of the bifurcation it fixes the sides of the nest, weaves them until they extend sufficiently beneath these branches to be attached below one to the other, and thus form a flat flooring. The nest thus roughly outlined resembles a basket with flat sides. The external walls are afterward solidified. To this effect, the bird makes use of the down of poplars or willows, which it agglutinates by means of its saliva and which it fixes with filaments of bark, wool and hair. The nest then presents the form of a rounded basket. At this moment, the bird begins to construct a small, lateral, circular aperture. This, however, is not the only one, for the nest has two openings. One of them is provided with a passageway from one inch to three inches in length, and the other remains open. One of the apertures is closed later on. However, I have seen a nest in which this aperture had not been stopped up. Finally, our bird places in the bottom of its nest a layer of vegetable down about an inch in thickness, and the construction is finished."

We must remark, however, that we have seen a certain number of these nests that exhibited quite perceptible differences in form from each other, due no doubt to the materials employed and the places where the nests were suspended. They have generally the form of a purse of from six to nine inches in length and from four to six inches in diameter. The entrance, which pretty accurately resembles the neck of a bottle, is sometimes horizontal and sometimes oblique.

It is in this charming cradle that the bird lays from five to seven pure white eggs, of elongated and cylindrical form. This bird is not common in France. It has been killed only accidentally in the north and

east. It takes up its quarters in summer in the neighborhood of Pezenas. It is found likewise in the departments of Aude, Eastern Pyrenees and Gard, and especially upon the banks of the Rhone. The true country of this bird, which is known scientifically as *Egithalus pendulinus*, is Russia, Lithuania and Galicia. In these countries its curious nest naturally strikes the superstitious with astonishment, and so therapeutic properties are ascribed to it. The naturalist Radde says that, among the Mongolians, the smoke given off through the burning of a piece of the nest is inhaled for the cure of intermittent fever. A nest



MOODY & PITCHER'S BLANKET FASTENER.

softened in warm water cures rheumatism, it being only necessary to apply it to the painful spot.

Evermann says that the "nest of this bird is regarded in Russia as very efficacious against all sorts of maladies, especially fevers and epizooties, which it has the property of warding off. A peasant of Astrakhan came one day to Kasan with a wagon load of these nests."

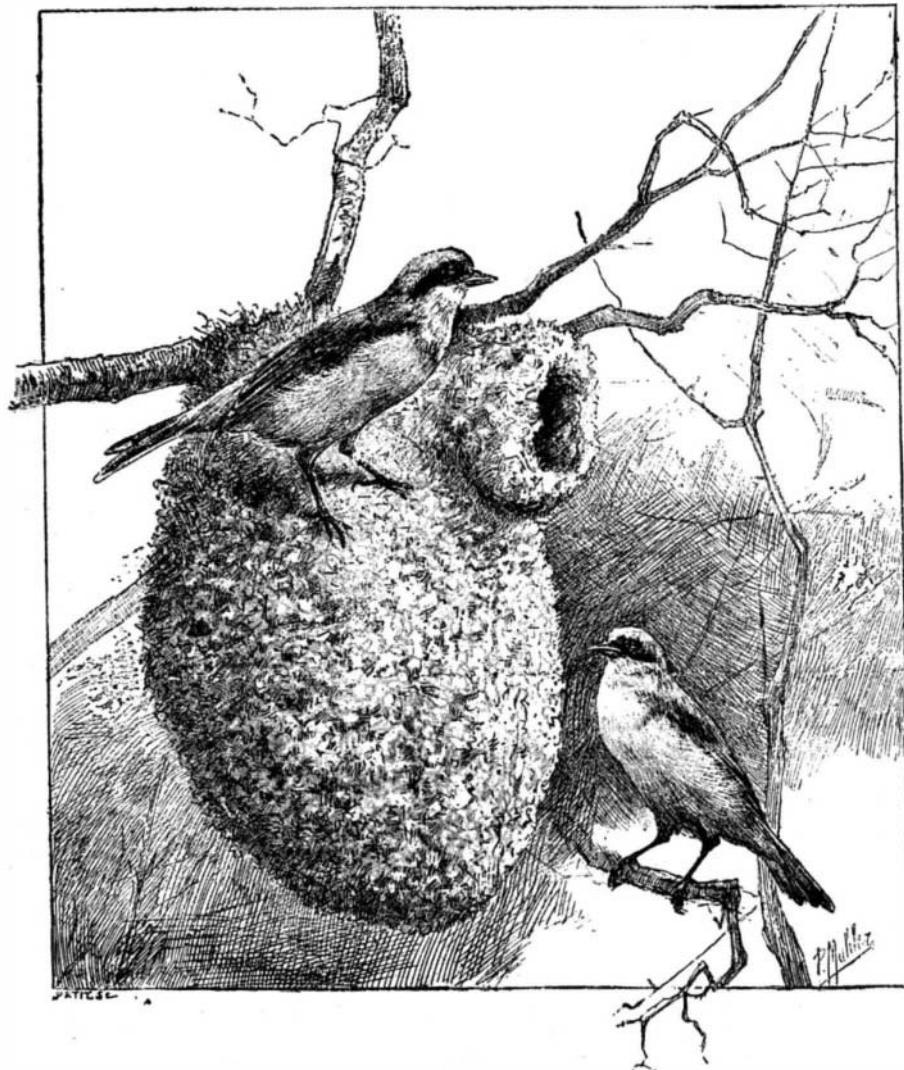
Finally, in the fens of the environs of Bologna, the simple-minded have a superstitious veneration for these nests, each hovel having one of them hanging near the door. The owners regard them as genuine lightning conductors, and the little architects of them as sacred birds. In that part of France in which the bird builds its nest we happily do not meet with such ingenuous prejudices.

This bird has sometimes been preserved in captivity by feeding it upon a pasty of nightingales' mixed with ants' eggs; but, like all other titmice, the bird is so restless and so active that it cannot long survive the loss of liberty.—*Le Naturaliste*.

A SIMPLE HORSE BLANKET FASTENER.

The device shown in the engraving is designed to be readily attached to the fabric without tearing it, and facilitates the quick and easy opening or closing and holding together of the edges of the blanket to which it is attached. It has been patented by Messrs. George A. Moody and Charles H. Pitcher, of Red Bank, N. J. Each of the holders is formed of two plates, or disks, having circular corrugations on their faces, one of the plates being on the front and the other opposite on the back of the blanket, the two plates being united by means of a central rivet, or by prongs projecting from one plate through apertures in the other, the prongs then being clinched. Engaging a loop on each holder is a fastening member, one of which is in the shape of a flat spring with a part doubled up to form a tongue, from which a finger piece bends outward. The other fastening member has a lip adapted to be engaged by the tongue, as plainly shown in the sectional view. To unlock the members they are moved slightly toward each other, when an inward pressure upon the finger piece disengages the tongue from the lip. Instead of a lip being formed, as shown, upon one of the fastening members, it may be provided with an aperture adapted to receive the tongue of the other member, the operation being substantially the same in both cases. This fastening may be conveniently opened or closed, but is not liable to open accidentally.

LEAD pencils were first used in 1594.



THE PENDULINE TITMOUSE, MALE AND FEMALE, AND THEIR NEST.