

**MECHANICAL SINGING BIRDS.**

The first automatic birds are quite old, and a remarkable specimen of them exists at the Conservatoire des Arts et Metiers. We represent this herewith (Fig. 1). It dates back to the last century. The birds are in-



Fig. 1.—MECHANICAL SINGING BIRDS OF THE EIGHTEENTH CENTURY.

Bontems, consisted in the substitution of a genuine warbling for the music box, and in giving these little singers the perfect appearance of life. A reproduction of the true song of all birds has been successfully obtained, and we have been enabled to hear all our ordinary artists, with the repertory peculiar to each of them; the nightingale, the black-bird, the chaffinch, the canary, the lark, the goldfinch, the bullfinch, and the warbler, and, among exotics, the tanager, the

lator of the bellows, F, to act through the rod, E. The longer it takes the teeth to pass, the longer the valve is open and the longer the bellows (No. 2) is actuated. The motion of the teeth is communicated to the rods, G and E, behind the support, S.

It will be understood that the song of the bird may differ so long as the two wheels, C, have not made a revolution, but that the same song must then begin again at the second revolution of the wheel, the same teeth commencing again to actuate the rods, G and E.



Fig. 2.—MECHANICAL SINGING BIRD OF MODERN CONSTRUCTION.

closed in a cage, and the mechanism is contained in the base of the latter.

The construction of such birds has now reached great perfection.

In the first place, let us speak of the external appearance of these little automatons. At first sight, the bird is absolutely like the natural one, whose plumage it borrows, whether it represents a simple nightingale or is adorned with the brilliant feathers of a bird of paradise. Neither in the pose nor the form could the art of the taxidermist do better. The attitude of each species is carefully studied and leaves nothing to be desired, even by the most fastidious ornithologist. Certain of these birds are inclosed in a simple cage or are placed upon a branch forming a perch, while others, placed upon a tree, flutter from one branch to another, without it being possible to see the little rod, mounted upon a pivot and hidden in the leaves, that carries it back and forth. Again, others may be placed upon a stand (Fig. 2), or, owing to the small size of their pedestal, in a basket or flowers. There are others (and these are humming birds) that are concealed in a snuff box (Fig. 3), and which, when the cover of the latter is raised, suddenly appear and begin to sing. After the air is finished, they re-enter the box and the cover closes of itself. The snuffboxes in which they are inclosed are decorated in all possible ways, with inlaid enamel work, Japanese designs upon silver and gold, old silver, repoussé work, inlaid work, etc. All styles are put under contribution, and especially the Louis XV. and Louis XVI. in gilt silver.

A very ingenious model is the one that we represent in the form of a pistol (Fig. 4). When aim is taken with the pistol, and the trigger is pulled, the bird, which was first concealed in the barrel, makes its exit, sings its song, and then re-enters the weapon.

The first automatic singing birds had a motion of the bill only, and it was by means of a bird organ or a

chewit, etc. We shall now explain the principle of the mechanism with which it has been possible to reproduce the modulations of the song of birds, and which we may observe is the same for every song.

Fig. 5 gives a general view of the apparatus with its principal parts. The clockwork movement, consisting

There has been an improvement introduced that consists in placing upon the same rod three pairs of wheels instead of one pair, and, when the air noted upon the first pair is finished, in bringing the following pair, by means of a snail, in front of the levers, where it replaces the one that has just been driven forward.

In order to be complete in this explanation, let us add that the intermission in the song is produced by the lever, P, which acts upon the bellows, and that the latter itself is actuated by a ratchet placed behind the box, M, of the motor. The apparatus that we have just described is the same for all birds. It is larger or smaller, more or less strong, and is placed in one direction or another, according to the space left free in the mechanical piece, but the principle does not change. In each bird, and especially when it is a question of a new song to be created, the delicate point of the adjustment is the whistle, aided by the bellows and piston, that will give the true character of the song and modulate it so as to make it rapid, sharp, grave or slow. It will be understood that the whistle may vary in diameter and length and have a more or less rapid escapement of air, so that its effects may be modified.

We have said that in snuff boxes, pistols and other small objects in which a singing bird and its mechanism are concealed, the opening of the object causes the bird to make its exit and to begin its song. It is here a question of a curiosity, and no attempt is made to produce an illusion, but rather astonishment. In the other birds, always exposed and visible, it suffices to press a detent placed behind the box, M, to set the apparatus in motion or to stop it. Of course, this detent



Fig. 3.—MECHANICAL BIRD IN A SNUFFBOX.

especially of a spring coiled in its barrel, is placed at M. It sets in motion an axle, A, that carries a star wheel or eccentric, B, which, through the levers, D, and the rods, H H, communicates motion to the bird.

These rods turn the head, open the bill, make the tail waggle and cause the wings to flap; and the various motions do not take place at hazard during the song, but

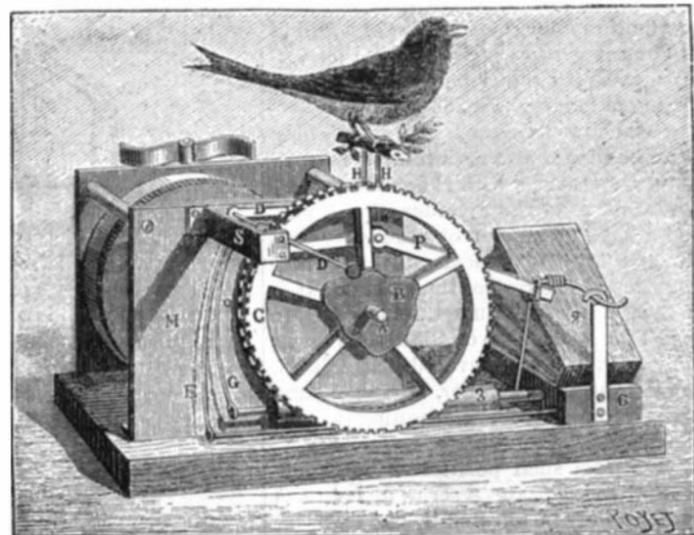


Fig. 5.—MECHANISM OF A SINGING BIRD.



Fig. 4.—MECHANICAL BIRD MAKING ITS EXIT FROM A PISTOL.

music box that they seemed to sing. As nothing better was to be had, these had to answer; but they really produced no illusion. Several types of this kind, of the time of Louis XV., are in existence.

The invention of the true automatic singing birds, and the improvements afterward introduced by Mr.

are naturally combined with the warbling that occurs at the same instant. This warbling is produced as follows: The same axle that carries along the star wheel revolves, at the same time, two coupled wheels, C, which, irregularly toothed, cause the piston or whistle (3) to act through the rod, G, and the regu-

does not produce its effect unless the clockwork movement is wound up. The little mechanical songster, whose plumage leaves nothing to be desired, when placed either in a cage or in a spray of flowers or foliage, gives the illusion of life very accurately.—*La Nature*,