

A NEW HEAD-HOLDER FOR CATS

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In work with experimental animals, fast and reliable fixation is needed.

As far as fixation of the extremities is concerned, it is well known that this problem has a simple solution—the paws are tied to the operating table, and this seems to satisfy everybody. But the problem of fixation of the head is far from being solved.

The old type of head-holder customarily found in experimental laboratories has not proven satisfactory, and the vast majority of experimenters no longer use it.

This head-holder, as everyone knows, consists of a half-ring worn on the neck, and a movable ring that fixes the facial part of the head. The shaft of the head-holder is fastened to the operating table by an ordinary clamp.

It seems to us that one of the major defects of this head-holder is that it greatly complicates manipulations on the animal's head and neck. It is not an easy matter for the experimenter to ignore this. Among other defects, we might mention that when the animal moves, its head frequently comes out of the head-holder. The animal can be fixed in only one position—on its back—which decidedly reduces the instrument's usefulness.

At present the most widely used method for fixing the head is the following: An ordinary nail or something of the sort is placed in the animal's mouth, and its jaws are then tied tightly to the nail; nail and head together are then fastened to the operating table.

In a comparison with the older method, this method of fixation even possesses certain advantages: With this method of fixation, access to the neck remains free, and it is possible to fix the animal in any position, which is very important.

But even this method is not without several major objections—specifically, that with this type of fixation the animal's respiration is severely hampered, fixation sometimes requires considerable time, and cases are not infrequent in which the animal is able to free itself from this "head-holder" with abrupt movements.

These considerations motivated us to design and construct a new model of a head-holder for cats. Our

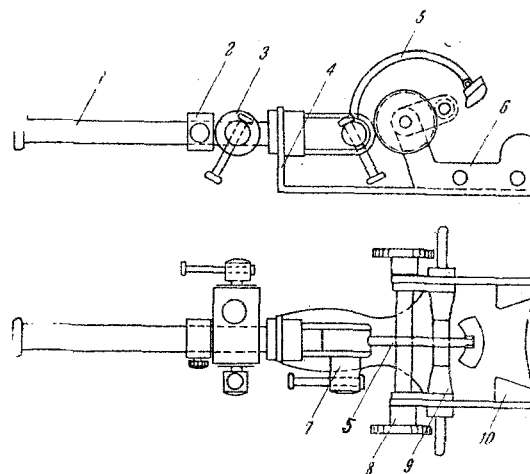


Fig. 1. Diagram of head-holder (1/2 natural size). 1) Arm; 2) connector for fixation; 3) angle connector for fastening arm to support; 4) base of head-holder; 5) nosepiece; 6) side plate; 7) fastener for nosepiece; 8) fastener for jaw clamp; 9) jaw clamp; 10) rest for lower jaw.

principal objectives were reliability of the instrument in actual use and relative ease of construction.

As may be seen from Fig. 1, this head-holder consists of an L-shaped brass plate (4) to which all other parts are fastened. The horizontal portion of this plate is shaped like a truncated cone with a semicircular indentation in its upper part. A shaped support made of plastic, where the lower jaw rests, is attached to the wide part of the plate. This support is so shaped as to restrict movements of the lower jaw in the lateral plane. At the sides of this support, brass plates (6) are held in place with screws, and the axis of rotation of a movable shaft (9) is held by these plates. The ends of this axis come out 12-15 mm from the sides, and fasteners (8) for the clamp are threaded on them; when these fasteners are tightened, the movable shaft is firmly fixed in a given position. The movable shaft serves for fixing the lower jaw. The shaft is placed behind the canine teeth, where it pins the lower jaw to the support and fixes it firmly.

For greater reliability the head-holder is also equipped with a device for fixing the upper jaw. This attachment has a holder in which a brass disk rotates, which in turn supports an arching arm with a molded nosepiece (5). On the axis of the holder there is a screw fastener (7), which fixes the disk and its nosepiece firmly when it is tightened. The nosepiece is shaped in such a way that it surrounds the nose and, resting on the zygomas, fixes the upper jaw, holding it down.

The holder for this attachment is fastened to the vertical part of the L-shaped plate by the arm of the head-holder. The arm itself is held by a connector (3) which rides on the horizontal arm of the operating table. The horizontal arm, in turn, is held by two connectors to vertical stands on the operating table (Fig. 2). By this means it is possible to raise and lower the head-holder, to move it to the left or right, or forward and backward, and finally, to rotate it 360°. The head-holder can be fastened to an ordinary operating table with a single vertical stand, with similar success. All manipulations are readily carried out on the fixated head of the animal.

As is evident from the description, the head-holder is simple to build and can be made in any workshop. With its help the head can be quickly and dependably fastened down. The head-holder absolutely does not interfere with

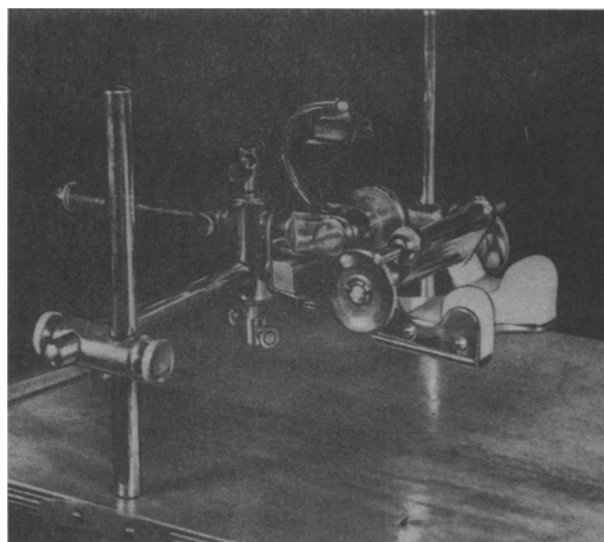


Fig. 2. Over-all view of head-holder fastened to the operating table.

in the neck region or on the head of the animal. It must be emphasized that the head-holder does not traumatize the tissues and can be used successfully in various operations in chronic experiments.