

quick-disconnect devices. This section contains the projectile-stopping mechanism and is not evacuated. A mylar diaphragm 18" in diameter and 0.005" thick provides an easily perforated seal between the two sections.

The projectile-stopping mechanism consists of a heavy wire cage, 18" in diameter and 8' long, stuffed with nylon or Dacron rags (Fig. 10). At the rear of the cage is welded a 4" thick by 24" diameter steel plate weighing 500 lbs; the total weight of the cage, rags, and steel plate is about 1000 lbs. This assembly is suspended on a rail and achieves a maximum velocity of about 2 m/sec when the maximum momentum of the projectile ( $\sim 10^8$  dyne-sec) is absorbed by it. The force required to stop the assembly within 3 inches of travel is therefore less than 7000 lbs, and is accomplished with shock absorbers bearing against the rear of the tank.

#### G. Target Holder and Alignment Tools

The target holder is a ring with a lapped shoulder against which the target is held by small breakaway tabs (Fig. 11). Adjustment of the orientation of the target holder is accomplished with three differential screws that provide high strength and fine adjustment capability.

The tools used to align the target holder perpendicular to the axis of the barrel are a brass gauge plug and a gauging fixture which carries a sensitive dial indicator. The gauge plug is a fourteen inch solid brass bar with the diameter machined .001 to .0015" smaller than the exit diameter of the gun muzzle. A two-inch tapered section is machined on the leading end to facilitate fitting the plug into the barrel. The gauging face of the plug is flat and perpendicular to the axis to within .05 milliradians and is periodically checked with the same fixture used to check the projectiles. The gauge plug is solid to provide a heat sink so that handling does not change its dimensions or straightness.

The gauging fixture is simply a ring, ground flat, and large enough to mate onto the target aligning surface. A sensitive dial indicator is rigidly supported through the ring to sweep a three and one-half inch