As best shown in Fig. 3, each of bearing pins 8 securing body members 4 and 6 together is provided with an inward axial extension 42 terminating in spherical ball formation 44, said balls being connected by means of a turnbuckle 46. Said turnbuckle comprises an internally threaded tubular member 48 and a screw member 50 threaded therein. Each of said turnbuckle members is provided at its outer end with an externally knurled enlargement 52, each of said enlargements being recessed at its outer end to present a socket 54 adapted to receive ball 44 of the associated clamp for rotational and universal pivoting movement. By means of knurled enlargements 52, turnbuckle 46 may readily be adjusted to vary the distance between clamps 2, and by means of ball and socket connections 44—54, the clamps may be freely angled relative to each other in any direction.

In use, clamps 2 are clamped respectively on a bone 32 at each side of a fracture 56 therein, as shown in Fig. 2, and secured in their clamping positions by means of lock nuts 40. Due to the freely adjustable relation between the clamps obtained by turnbuckle 46, the clamps are readily adjustable to clamp the ends of the fractured bone regardless of any misalignment caused by the fracture. The teeth 30 of jaws 18 bite into the bone cortex to prevent any slippage of the clamp relative to the bone. After the clamp has been positioned as described, the operator grasps hand grips 14 of each clamp, and, by manipulation thereof brings the bone fragments into proper alignment. Each clamp acts as a lever, fulcrumed on ball 44. As the bone fragments are adjusted, the angular relation of the clamp relative to the bone, of course, varies greatly. However, since jaws 18 are carried by the clamp body members for both rotational and universal pivoting, the jaws do not move relative to the bone. In this manner the clamps may be freely pivoted relative to the bone without further splintering or injury to the bone cortex. A common difficulty in setting bone fractures, paticularly fractures of the femur or other large bones, is that the fracture causes a muscle spasm which pulls the end portions of the bone adjacent the fracture into overlapping relation with a force often as great as 150 lbs. Overcoming this muscular force presents a considerable problem. This tool provides adequate leverage whereby a single operator, without the use of auxiliary traction applying apparatus, may overcome said muscular force and set the bone properly. After the bone has been set, it may be immobilized by applying a clamp such as disclosed in my copending application, Serial No. 114,210, filed September 6, 1949, now Patent Number 2,583,896, directly over the fracture, and affixing a splint plate to said bone with screws or bolts, or by other suitable means.

A feature of this invention is the rotational and pivotal mounting of jaws 18. Besides permitting angulation of the clamps relative to the bone with a minimum of trauma or injury, it permits the jaws to adjust themselves to fit bones having tapered or irregular surfaces, in order to grip them efficiently, and also permits the jaws to accommodate bones of a rather wide range of sizes.

In the modified form shown in Figs. 6 and 7, the construction and operation is substantially the same as that of the preferred form, except that arcuate jaws 58 are used in place of circular jaws 18 of the preferred form. Jaws 58 are

elongated transversely to the clamp body members, and are cylindrically curved about axes at right angles to mounting rivets 60, which correspond to rivets 20 of the preferred form. Each of rivets 60 is rigidly fixed in arm 16, and is formed to present a hemispherical ball formation 62 projecting from the inner surface 28 of said arm. The outer surface of the associated jaw 58 is recessed to form a socket 64 for receiving ball 62. Rivet 60 is provided with a headed axial extension 66 which projects through a loosely fitting hole 68 formed centrally in jaw 58. The concave inner surface of each jaw 58 is serrated to present a plurality of sharp edged teeth 70 extending transversely thereacross. Thus jaws 58 are free to rotate and to be universally pivoted on rivets 60, and function substantially similarly to jaws 18 of the preferred form. They are particularly adapted for use with bones of relatively regular cylindrical form, and with reference to such bones have the advantage of a relatively wide gripping area. This brings more teeth into play, and thus provides an efficient grip with very little penetration of the bone surface by the teeth.

What is claimed is:

1. A bone reducing tool comprising a pair of clamps each including a pair of elongated body members pivotally joined intermediate their ends, said body members forming cooperating hand grips and oppositely extending jaw supporting arms; a substantially planar circular jaw member disposed against the inner surface of each of said arms adjacent the free end thereof, said jaw having teeth formed on its inner surface and being secured rotatably to said jaw for axial rotation; and a member universally connected at its respective ends to said clamps.

2. A bone reducing tool comprising a pair of clamps each including a pair of elongated body members pivotally joined intermediate their ends, said body members forming cooperating hand grips and oppositely extending jaw supporting arms; a substantially planar circular jaw member disposed against the inner surface of each of said arms adjacent the free end thereof, said jaw having teeth formed on its inner surface and having its outer surface spherically curved and resting against the inner surface of the associated arm; a rivet fixed in said arm and passing through a loosely fitting central hole provided in said jaw; and an adjustably extensible member extending between and connected rotatably and pivotally to said clamps.

3. A bone reducing tool comprising a pair of clamps each including a pair of elongated body members pivotally joined intermediate their ends, said body members forming cooperating hand grips and oppositely extending jaw supporting arms; a jaw member secured rotatably to the inner surface of each of said arms for rotation about an axis substantially at right angles to said arm; said jaw being substantially cylindrically curved about an axis disposed transversely to said arm and having its inward concave surface transversely serrated; and a member connected pivotally at its respective ends to said clamps for universal movement.

4. A bone reducing tool comprising a pair of clamps each including a pair of elongated body members pivotally joined intermediate their ends, said body members forming cooperating hand grips and oppositely extending jaw supporting arms; a jaw member disposed ad-