Jan. 23, 1940. W. D. FRIDDLE 2,187,852

FRACTURE NAIL AND FRACTURE NAIL DRIVER

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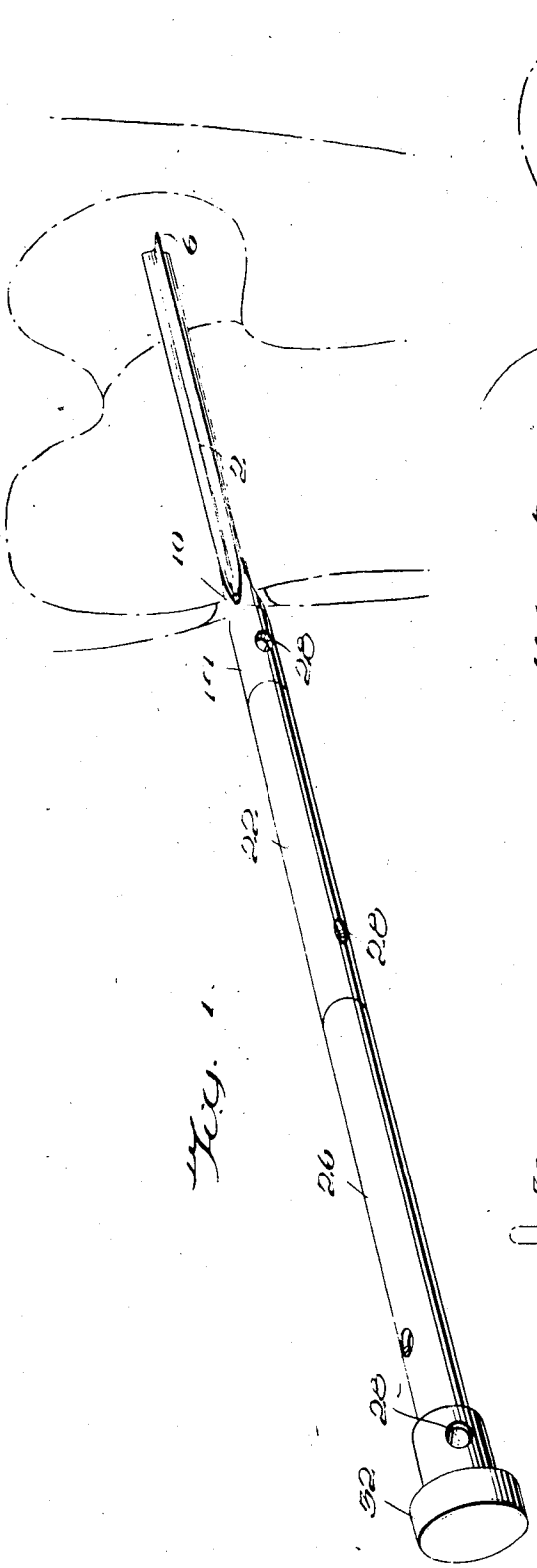

Fig. 1.

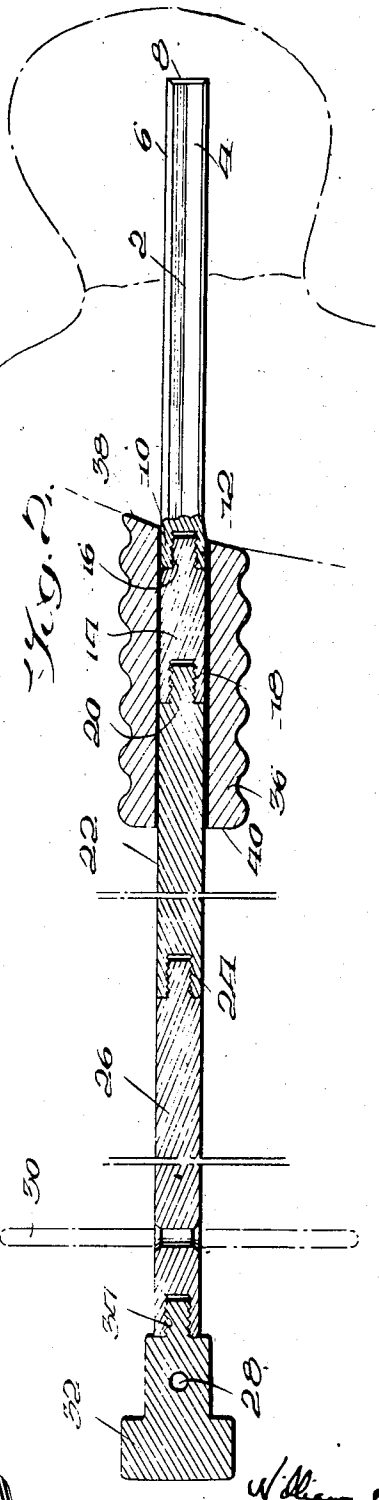

Fig. 2.

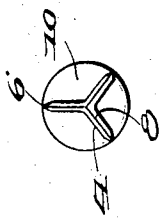

Fig. 3.

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FRACTURE NAIL AND FRACTURE NAIL DRIVER

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5 Claims. (Cl. 128—92)

In the past few years, the treatment of a fracture of the neck of the femur has been satisfactorily accomplished by the use of what is known as a surgical nail.

It is generally known that these surgical nails are driven with great care through the lateral cortex of the femoral shaft about an inch below the lower margin of the trochanter and in a plane parallel to the surface of the supporting surface.

The nail which is thus used is directly mesially and proximally toward a point midway between the spine of the pubis and the anterior-superior spine. The accurate and careful driving of these surgical nails is done by the repeated use of X-ray pictures which are utilized so that the path of the nail may be very carefully followed as it is driven into the bone.

The object of my invention is to provide an extended driver which may be attached to the head end of a surgical nail, so that the direction of the nail may be more readily controlled as it is being driven into a fractured bone.

A further object of my invention is to provide a surgical nail driver about which is positioned an impactor, which impactor may be used not only as an impactor but also as an extracting hammer.

In the accompanying drawing:

Fig. 1 is a perspective view showing a conventional surgical nail positioned within the neck of a femur (shown in dotted lines) with my nail driver attached;

Fig. 2 is a longitudinal cross-section through the driver and the head of a conventional surgical nail; and

Fig. 3 is an end view of a conventional surgical nail.

The surgical nail **2** is conventional in its form, having three flanges **4** extending out from the center of the nail. Each of these flanges **4** are provided with sharpened edges **6**, as is the end **8** of the nail.

The head **10** is drilled and provided with screw-threads **12**.

The driver is made in three independent sections which may or may not be secured together by their screw-threaded portions, as shown in Figs. 1 and 2. I provide a relatively short section **14**, which has at one end thereof, screw-threads **16** which are adapted to fit and be screwed into the screw-threads **12** in the head of the nail **2**. The other end of the short section **14** is provided with female screw-threads **18**, into which the male threads **20** of the section **22** may be secured. The other end of the section **22** is provided with female screw-threads **24**.

The section **26** is provided at one end thereof with male screw-threads, so that the section **26** may be added onto the section **22**, if desired.

Each of these sections **14**, **22**, and **26** is provided with a drilled hole **28**, through which suitable rods **30** may be placed, so that the sections may be screwed tight, to be securely fastened together at the time that they are to be used.

At the end of the sections remote from the surgical nail **2**, I provide an enlarged head portion **32**, the smaller end of which is provided with male screw-threads **34**, so that the head **32** may be securely attached to the last driver section (the section **26** as illustrated in the drawing). This head **32** is also provided with a drilled hole **28**, so that the head portion may be securely fastened to one of the driver sections.

When the driver is assembled as shown in Figs. 1 and 2, it is ready for use and may be readily utilized to properly position the nail **2**, as it is driven into the fractured neck of a femur.

Often it is found desirable to place an impactor hammer **36** over the driver sections. This hammer is a relatively heavy tube provided with an end **38** which is cut at an angle to the longitudinal axis of the hammer **36** so that the end **38** will approximately fit the normal obliquity of the femoral shaft at the base of the trochanter. The end **40** of the impactor hammer **36** is cut at approximately right angles to the longitudinal axis of the hammer. This impactor hammer **36** fits relatively loosely around the driver, so that it may be readily slid along the driver at such times as it is desirable to use the end **40** of the hammer to hit against the head **32** for purposes of extracting a surgical nail **2**.

It is often found that even when a great deal of care has been used in driving a surgical nail, it is necessary to either withdraw the nail completely, or at least partially, in order to correct the course which it will follow as it is again driven into the fractured neck of a femur.

After the surgical nail has been completely driven into the fractured bone, this impactor hammer **36** may be used for the purpose of being placed around the head **10** of the nail and the short extension **14** with the end **38** abutting against the femoral shaft, at which time the end **40** of the impactor **36** may be gently hammered, to closely approximate the fragments of the fractured neck of the femur.

It will be understood that while I have shown my driver as being made in three sections, it

may well be made in either more or less than three sections. Also the sections may or may not be of the same length and the section 14 need not be provided as a short section, although it has gentrally been found advisable to make the section 14 short, so that it may properly position the impactor hammer 26 around the head 10 of the surgical nail, so that the impactor may be utilized to closely approximate the fragments of the fractured bone after the nail has been driven into its final position.

It will be understood while I have shown my fracture nail as having the head thereof drilled and tapped, yet it is entirely possible the fracture nail may be made having the threads secured to the head by in some other manner rather than by drilling and tapping. At present it is believed that it will be much more satisfactory to have the threads of the fracture nail internal threads, but it will be understood that the same result may be obtained by providing threads on the head end of the fracture nail in some other form.

I claim:

1. The combination of a fracture-nail and driver, including a nail having a drilled and tapped head, a rod, and a screw-threaded projection on said rod.

2. A fracture-nail driver including a fracture-nail having screw-threads at its head end, a rod having screw-threads on one end thereof to engage the screw-threads on said nail head, a head screw-threaded to the other end of said rod, and an impactor tube partially encasing said rod and slidable longitudinally thereof.

3. A fracture-nail driver including a fracture nail having a drilled and tapped head, a rod, a screw-threaded end on said rod, a head on the other end of said rod, and a tube slidable longitudinally on said rod.

4. A fracture-nail driver including a fracture nail having a drilled and tapped head, a rod screw-threaded at one end thereof to said fracture-nail head, and an enlarged head screw-threaded to the opposite end of said rod.

5. A fracture-nail driver including a fracture-nail having screw-threads in its head end, a rod having screw-threads on one end thereof to engage the screw-threads in said nail head, a head screw-threaded to the other end of said rod, and an impactor tube slidable longitudinally of said rod, said rod having a plurality of sections.

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