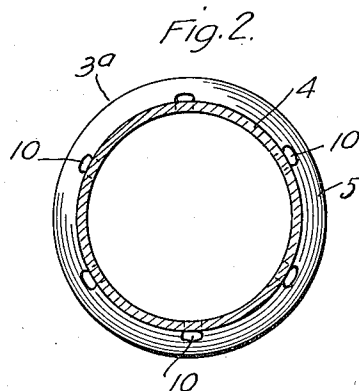
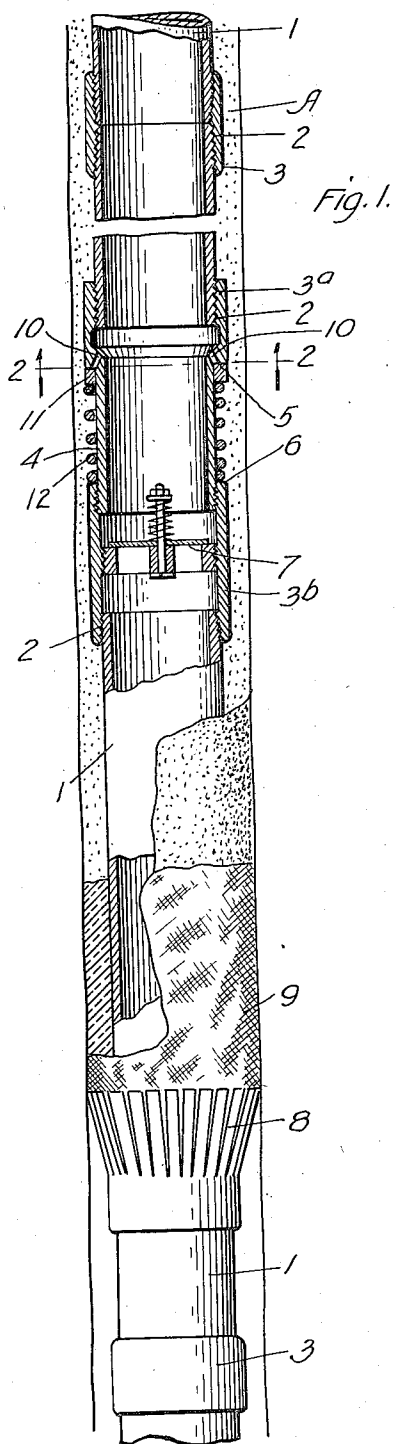


Sept. 28, 1926.

1,601,239

E. V. CROWELL
CEMENTING BARREL
Filed March 7, 1925



INVENTOR.
Erd V. Crowell

BY

R. W. Smith.
ATTORNEY.

Patented Sept. 28, 1926.

1,601,239

UNITED STATES PATENT OFFICE.

ERD V. CROWELL, OF LOS ANGELES, CALIFORNIA.

CEMENTING BARREL.

Application filed March 7, 1925. Serial No. 13,752.

This invention relates to cementing barrels forming a section of a well casing and having valve controlled ports adapted for discharge of cement from the bore of the well casing into the annular space between the latter and the bore of the well; and is an improvement on my inventions of this type as set forth in my U. S. patent applications Ser. No. 5,477, filed January 29, 1925, and Ser. No. 121,040, filed July 7, 1926.

It is the object of the invention to provide normally closed valvular means at the exterior of the well casing for convenient access thereto; but arranged so as not to project beyond the periphery of the cementing barrel nor open outwardly therefrom, in order to offer no obstruction to the free movement of the string of casing into the bore of a well, nor impinge against the wall of the well bore and thus prevent full opening of the valvular control when cement is forced outwardly through the discharge ports.

It is a further object of the invention to provide an extremely simple but practical valvular control, adapted to normally positively close the valves, but readily yielding for opening thereof, when cement is forced downwardly through the casing.

The invention will be readily understood from the following description of the accompanying drawings, in which:

Fig. 1 is a vertical section through the cementing barrel in position for use.

Fig. 2 is a transverse section on the line 2-2 of Fig. 1.

The cementing barrel forms a section of a usual string of well casing 1 adapted to be received in the bore of a well A, the barrel being placed in the string of casing so as to position the same adjacent the bottom of the level which is to be cemented. The sections of the string of casing are fixed relative to one another by usual threaded connections 2 on coupling collars 3.

The cementing barrel 4 is mounted between adjacent lengths of casing 1 by coupling collars 3^a—3^b at the ends of the barrel and forming confronting shoulders 5—6 spaced axially of the string of casing. The upper collar 3^a is preferably integral with the cementing barrel and engages the adjacent section of casing by threaded connection 2, and the lower collar 3^b connects the cementing barrel and the adjacent casing by threaded connections 2 at its respective ends.

A back pressure valve 7 is preferably mounted in the string of casing below the cementing barrel to prevent passage of cement downwardly through the casing below the level to be cemented; and said valve is illustrated as mounted in the collar 3^b.

The space between the string of casing and the bore of the well is preferably packed off at the bottom of the level which is to be cemented; and for this purpose a basket comprising spring fingers 8 is fixed on the casing below the cementing barrel. When the string of casing is lowered into the well, the upper free ends of fingers 8 frictionally engage the wall of the well bore, and packing shown as fibrous material 9 is mounted on the casing so as to be supported by the basket below the cementing barrel, and thus provide a tight joint between the casing and the bore of the well.

In order to discharge cement from the bore of the string of casing and through the cementing barrel, the latter is provided with radial ports 10 extending through the shoulder 5 of collar 3^a and opening downwardly and outwardly into the annular space between the string of casing and the bore of the well.

Ports 10 are normally closed by a collar 11, preferably of hard rubber, which is slidably mounted on barrel 4 and adapted to seat against shoulder 5 so as to overlie and close the ports. The collar is yieldably held to its seat for normal closing of the discharge ports, by a spring shown as a coil spring 12 extending around barrel 4 and abutting at its ends against the underside of collar 11 and the shoulder 6 of collar 3^b. By this arrangement the valve collar and its spring lie wholly within the circumference defined by the peripheries of the coupling collars of the string of well casing, so as to offer no obstruction to the free entrance of the casing into the bore of the well.

Cement forced downwardly through the string of well casing and outwardly through ports 10 of the cementing barrel, forces valve collar 11 downwardly against the action of its spring and thus opens the ports for discharge of the cement into the space between the wall of the well and the string of casing. The shifting of valve 11 longitudinally of the casing rather than radially thereof, eliminates the possibility of the valvular control striking the wall of the well, irrespective of restrictions in the

well bore, and full opening of the valve is thus assured.

After discharge of all of the cement, the valve collar 11 is positively resealed by its spring 12, so as to close the discharge ports and thus permit the cement to harden without the possibility of it reentering the bore of the string of casing. The back pressure valve 7 is subsequently drilled out in usual manner to provide an unobstructed passage through the bore of the string of well casing.

I claim:

1. A cementing barrel having a laterally offset coupling collar at its end forming a transverse shoulder, said barrel having a port opening through said shoulder, and a valvular control longitudinally slidable relative to said barrel so as to seat against said shoulder and close said port.

2. A cementing barrel having a longitudinal bore and a port opening from said bore through said barrel, and a valvular control for said port movable longitudinally of said barrel by the pressure of material in said bore to open said port for discharge of said material.

3. A cementing barrel having a longitudinal bore and a port opening from said bore through said barrel, a valvular control for

said port movable longitudinally of said barrel, and yieldable means tending to close said valvular control.

4. A cementing barrel having a longitudinal bore and a lateral exterior shoulder with a port opening from said bore through the barrel at the shoulder, a valve longitudinally slidable on the barrel and adapted to seat against the shoulder for closing the port, and a spring on the barrel engaging said valve for yieldably closing the same.

5. A cementing barrel having a transverse shoulder and a port opening through said barrel, and a valvular control longitudinally slidable relative to the barrel to open and close the port, said valvular control abutting against the shoulder when the port is closed.

6. A cementing barrel having a port opening therethrough, a valvular control for the port movable longitudinally of the barrel by pressure of material in the barrel to open the port, and yieldable means tending to move the valvular control so as to close the port.

In testimony whereof I have affixed my signature to this specification.

ERD V. CROWELL.