

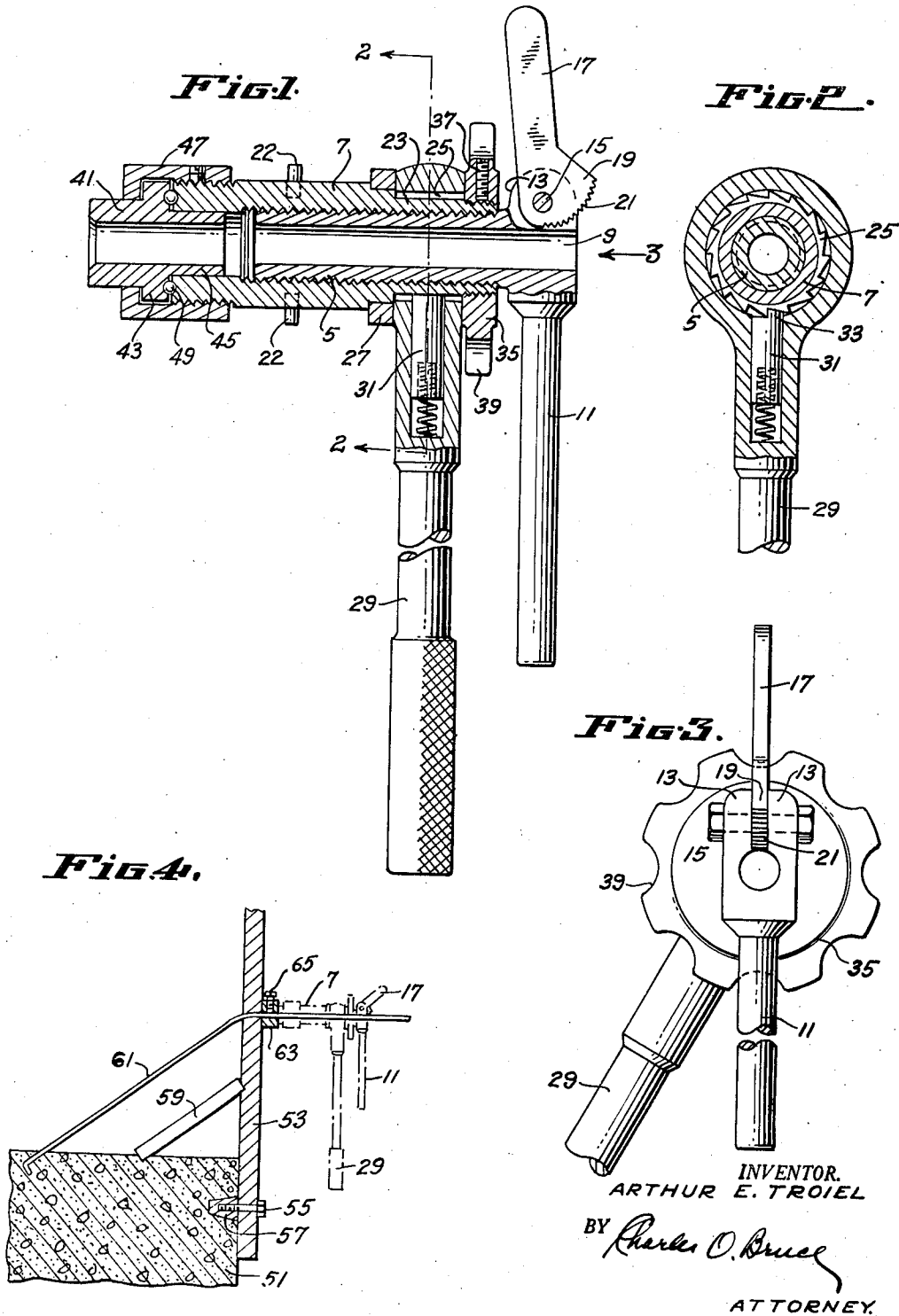
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ROD PULLER

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ROD PULLER

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2 Claims. (Cl. 254—29)

My invention relates to rod pullers and more particularly to rod pullers adapted for use in the bracing of forms for concrete molds in the fabrication of large structures as concrete dams and the like.

Among the objects of my invention are—

1. To provide an improved rod puller which can be conveniently handled and operated;

2. To provide an improved rod puller adapted for heavy duty work and which is designed to reduce the operating effort on the part of an operator to a minimum;

3. To provide an improved rod puller of simple but rugged construction assuring certainty of operation in use; and

4. To provide an improved rod puller capable of rapid manipulation in normal use.

Additional objects of my invention will be brought out in the following description of the same taken in conjunction with the accompanying drawing wherein—

Figure 1 is a longitudinal view in section through the entire device;

Figure 2 is a view in section transverse of the device taken along the line 2—2 of Figure 1;

Figure 3 is an end view in the direction indicated by arrow 3 of Figure 1; and

Figure 4 is a view illustrating the application of my improved rod puller in the bracing of forms for the pouring of concrete.

My improved rod puller comprises a pair of concentric members 5 and 7, one threaded within the other. The inner member 5 is formed with a longitudinal bore 9 throughout the entire length thereof, and terminates at one end of a depending handle 11. At the same end, the inner member 5 is provided with a pair of upstanding ears 13 between which is pivoted, as on a shaft 15, a cam lever 17, including a cam head 19. The contour of the cam head is formed on a spiral and is serrated to provide a series of teeth 21.

At an intermediate location, a pair of diametrically positioned lugs 22 extend from the surface of the outer member 7. A portion 23 of the outer member is of reduced cross section. This portion has formed about the periphery thereof a plurality of ratchet teeth 25. A flange ring 27 is mounted about the outer member 7 at a location adjacent the ratchet toothed portion 23, this ring providing a bearing surface for one face of a ratchet handle 29, which encircles the ratchet toothed portion of the outer member. This handle is provided with a concealed pawl in the form of a spring biased pin 31, whose ratchet engaging end 33 is of reduced section and shaped

to provide a complementary fit with the ratchet teeth 25.

The ratchet handle 29 is maintained in position about the ratchet by a handle retaining collar 35, which is threaded upon the end of the outer member 7 and secured thereto against accidental unthreading by means of a set screw 37 passing radially through the collar and engaging the threaded end of the member 7. This ratchet handle retaining collar has a scalloped periphery 39 to provide for convenient manual gripping of the same.

A cylindrical fitting 41 formed with an intermediate rib 43 is assembled to the other end of the outer member by telescoping a portion 45 of reduced diameter into the open end of the outer member. This cylindrical fitting is retained against withdrawal by a holding collar 47 which is slipped over the exposed end of the fitting 41 and threaded to the outer member 7 sufficiently to prevent displacement of the fitting but not sufficient to bind the same against independent relative rotation with respect to the outer member. The opposing surfaces between the rib 43 and the end of the outer member 7 are preferably grooved to provide a ball race to receive a plurality of ball bearings 49, whereby to facilitate such independent relative rotational movement of the fitting.

The advantages of my improved rod puller can best be brought out by a brief discussion of the manner in which the device functions when employed in the bracing of a form for a concrete mold.

In constructing large concrete structures such as dams or the like, the structure is cast in sections, each lower section represented by the section 51 of Figure 4, serving as a support for the form walls 53 which make up the mold for the adjacent upper section to be poured. The form wall is bolted to the lower section 51 by bolts 55 engaging threaded sockets 57 which have previously been embedded in the face of the section during pouring. The wall is then braced in preparation for the pouring of the mold. This is accomplished by jamming a pipe or the like 59 between the lower section 51 and the form wall 53, then tensioning a rod 61 which is anchored at one end in the lower section and extends through the form wall. When properly tensioned to assure sufficient rigidity of the wall for pouring purposes, a collar 63 is preferably affixed to the rod adjacent the outer surface of the wall.

In utilizing my improved rod puller for the purpose, the collar 63 is first slipped over the

rod 61 and the free end of the rod is threaded through the rod puller. With the fitting 41 bearing against the collar 63, the cam lever 17 is rotated to cause the teeth 21 to bite into the rod and clamp the same against withdrawal. Operation of the ratchet handle 29 will then cause rotation of the outer member 7, with a consequent unthreading of the inner member 5 to thereby tension the rod. The effort required for this is considerably reduced by the presence of the independently rotatable fitting 41, as this allows for substantially free rotational movement of the outer member 7 independent of the surface against which the fitting bears.

The handle 11 provides a convenient grip on the device during the tensioning operation, and at the same time enables the operator to restrain the rod from twisting while being placed under tension.

In taking up slack during the first few manipulations of the ratchet handle, the scalloped collar 35 enables one to hold the outer member 7 against oscillating with the movements of the handle, should such tendency exist, until the load on the device becomes sufficient to render further holding unnecessary.

When proper tension has been placed on the rod, the collar 63 is fixed thereto by a set screw 65, following which, removal of the rod puller for further use elsewhere is permitted. In removing the device, it is given a few turns in reverse with a suitable spanner wrench in engagement with the lugs 22. This relieves the device of all stress from the rod under tension, enabling the cam lever 17 to be lifted out of engagement with the rod, thus freeing the entire device.

While I have described one embodiment of my invention in detail, I do not desire to be limited in my protection to such details, except as may be required by the prior art and annexed claims.

I claim:

1. In a rod puller of the type comprising a pair of concentric members, one threaded within the other and adapted upon relative rotational movement to unthread itself and thereby increase the overall length of said puller; an outer concentric member having an end section of reduced diameter and provided with an abutting shoulder adjacent the inner end of said section; a plu-

5 rality of ratchet teeth disposed about said section of reduced diameter over only a portion of the length thereof and terminating short of the outer end of said section, leaving an end portion devoid of teeth; a ratchet handle having a ring head snugly encircling said toothed portion of said section, and a handle depending therefrom, said handle having a spring pressed radially disposed pawl protruding therefrom into pressure engagement with the toothed portion of said section of reduced diameter; and a collar affixed to the end of said section to hold said ratchet head in abutment against said shoulder, said collar having a diameter greater than that of said outer concentric member and its edge scalloped to provide for manually gripping of the same, to retain said outer concentric member from undesired rotational movement during resetting strokes of the ratchet handle.

2. In a rod puller of the type comprising a pair of concentric members, one threaded within the other and adapted upon relative rotational movement to unthread itself and thereby increase the overall length of said puller; an outer concentric member having an end section of reduced diameter and provided with an abutting shoulder adjacent the inner end of said section; a plurality of ratchet teeth disposed about said section of reduced diameter over only a portion of the length thereof and terminating short of the outer end of said section, leaving an end portion devoid of teeth, said end portion being threaded; a ratchet handle having a ring head snugly encircling said toothed portion of said section, and a handle depending therefrom, said handle having a bore therein terminating in the interior surface of said head; a spring pressed pawl in said bore and protruding therefrom into pressure engagement with the toothed portion of said section of reduced diameter; and a collar threaded to the threaded end of said section to hold said ratchet head in abutment against said shoulder, said collar having a diameter greater than that of said outer concentric member and its edge scalloped to provide for manually gripping of the same, to retain said outer concentric member from undesired rotational movement during resetting strokes of the ratchet handle.

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