March 28, 1950 W. J. STREADER 2,502,288

FLUID-OPERATED PRESS

Filed Oct. 16, 1946

Fig. 1.

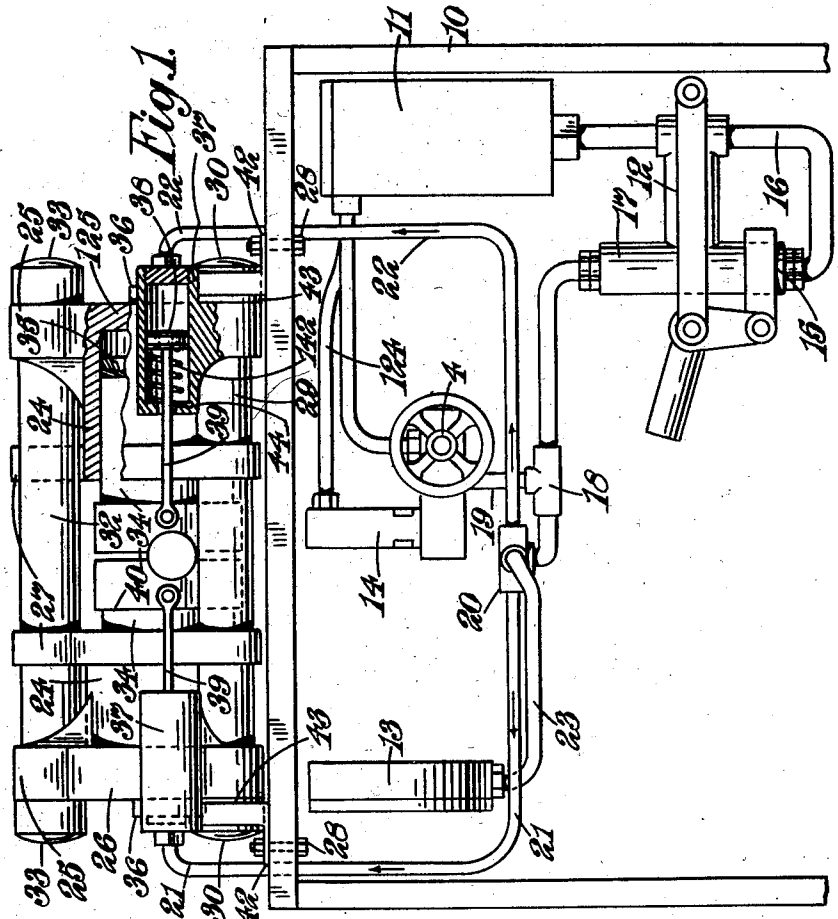
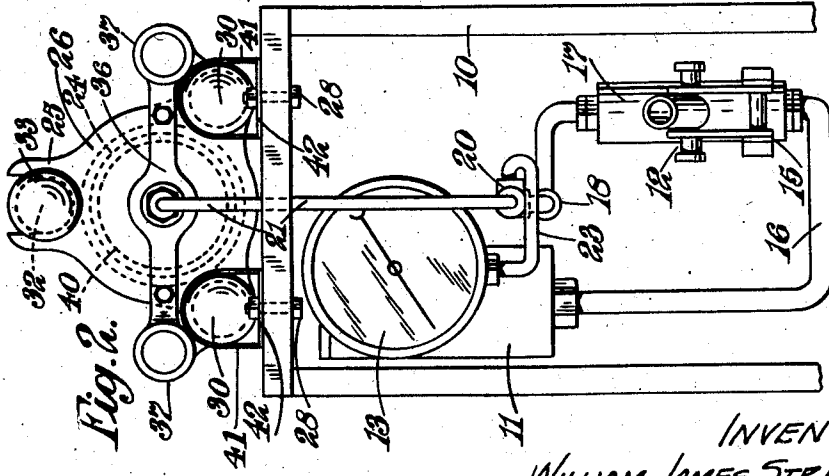


Fig. 2.



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FLUID-OPERATED PRESS

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Section 1, Public Law 690, August 8, 1946
Patent expires May 16, 1965

1 Claim. (Cl. 140—113)

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This invention relates to fluid-operated presses and has for an object to provide a transportable press which can be easily handled and moved to different locations where pressing operations are required to be carried out in situ. Such a press is particularly applicable to forming joints between cables where the ends of the cables are encircled by a sleeve which is pressed into firm junction with the outer surfaces of the cables, such as is described, for example, in the specification of Serial No. 650,560, filed February 27, 1946.

According to this invention, a fluid-operated press comprises a cylinder, a plunger projecting therefrom, at least three tie members connected to and extending beyond said cylinder and plunger, and a platen or second cylinder and plunger secured to the other ends of said tie members the connections between any of said tie rods and the cylinders, or platen, being readily separable to facilitate the insertion of the work to be pressed.

Preferably, two opposed cylinders and plungers are provided, which cylinders are connected together by the aforesaid tie members. In the case where a press of this kind is employed for forming a joint between cable sheaths by compressing a sleeve thereon, and where it is not possible to thread the end of the cable between the tie members, the cable may be readily inserted between the two plungers by removing one or other of the aforesaid tie members. In the case where three tie members are employed, only one of them need be removed.

In the case where removable die members are required to be employed in the pressing operation, the aforesaid removable dies are either located in the required position by being arranged to rest and slide along the aforesaid tie members, or are located on cradles which rest and slide along said tie members.

If the plunger is single-acting, resilient means may be provided for effecting the return stroke of the plungers. For example, there may be attached to each said die or cradle two rods, one on either side of the cylinder, which rods extend through guides fixed to the cylinder and are encircled by compression springs which are disposed between the faces of the guides and heads on said rods.

In one form of construction according to this invention embodying two cylinders and plungers, each cylinder is provided at both ends thereof with three outwardly extending lugs one of which is forked and through which the tie members extend, which members are in the form of rods

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threaded at their extremities to receive heads which bear against the outer faces of said lugs, whereby the distance apart of the two cylinders may be adjusted.

The following is a description of one embodiment of the invention, reference being made to the accompanying drawings, in which:

Figure 1 is a diagrammatic side elevation of the apparatus with certain parts thereof shown in section, and

Figure 2 is an end elevation of the apparatus looking from the right of Figure 1.

The apparatus is arranged for applying a junction sleeve to the outer surfaces of a cable as is described in the specification of Serial No. 650,560. The apparatus is mounted on a stand or cabinet 10 within which is secured a liquid reservoir 11, a hand-operated pump 12, a pressure gauge 13, a release valve 14 and a control cock 4. The reservoir may be cylindrical in shape and be provided with a spring loaded or gravity loaded plunger for applying a pressure head to the liquid therein. The suction side 15 of the pump is connected by a conduit 16 with the bottom of the reservoir 11, while the outlet side 17 of the pump is connected through one T-piece 18 and conduit 19 with the aforesaid release valve 14 and control cock 4, and through another T-piece 20 with conduits 21 and 22 leading to the cylinders of a press about to be described. The T-piece 20 is also connected by a conduit 23 with the aforesaid pressure gauge 13. The release valve may be pre-set so as to open at a predetermined safe pressure and, when open, the liquid flowing past it returns through a conduit 124 to the top of the reservoir 11. The control cock 4 which is in the form of a throttle valve is arranged to connect the conduit 19 also with the top of the reservoir 11, thus short-circuiting the delivery side of the pump. By this means, the pressure in the conduits 21 and 22 may be controlled. The press which is mounted on top of the stand 10 comprises two axially aligned cylinders 24 each of which is closed at one end 125. Each cylinder is provided at the closed end with three stout lugs. Each uppermost lug 25 is forked while the other two lugs 26 are provided with holes. Extending through the holes in said lugs 26 are two tie rods 29 having heads 30 at either end thereof which are threaded to engage the threaded extremities of the tie rods but are locked thereto so that the two cylinders may be located against outward movement at the required distance apart. A third tie rod 32 extends through the forked lugs 25 and is also

provided with heads 33 at each end which are of such a size as to overlap the side faces of the lug. The press is held in position on the stand 10 by clips 41 which extend over the tops of the heads 30 of the lower tie rods which clips are provided with lugs 42 by which they are secured by bolts 28 to the stand, a gap 43 being left between the clips and the cylinder ends so that there is no axial constraint imparted by the clips to the cylinder. Mounted in each cylinder is a ram 34 against the inner face of which is arranged a cup washer 35. The supply conduits 21 and 22 communicate respectively with the two closed ends of the cylinders so that the fluid pressure forces the two rams towards one another when the control cock 4 is adjusted so as to prevent the short-circuiting of the liquid. A yoke 36 is secured on the outside of the closed end of each cylinder so as to project on either side thereof and fixed to each projecting end is a guide cylinder 37 in which slides a block 38 connected by a rod 39 connected either to one part of the die 40 which contracts the sleeve on to the cable or to the end of the ram. A compression spring 142 is arranged between the block 38 and an end face 44 of the cylinder. By this means, the ram and the parts of the die may be separated when the fluid pressure is released. The lower sides of the die parts 40 may be shaped so as to be located relatively to one another by resting on the tie rods 29. Alternatively, they may be mounted on a cradle which engages the said tie rods.

Thus, in a case where it is desired to shrink a sleeve on to a continuous cable, the upper tie rod is removed from the forked lug 31, the cable in its sleeve is passed between the two separated die parts 40, the tie rod 32 is placed in position, the control cock 4 is adjusted in a position so that when pumping takes place pressure will be generated in the supply conduit 22, whereupon the rams and die parts will move together and a pressure will be exerted on the sleeve dependent upon the adjustment of the control cock 4 or the release valve 14, whichever is the greater. The required pressure will be maintained so long as pumping takes place. When it is desired to separate the die parts, the control cock 4 is opened, whereupon the spring-controlled connecting rod 39 will draw the die parts apart.

I claim:

A liquid operated press comprising two coaxially and horizontally arranged cylinders

spaced apart, a plunger projecting from each cylinder towards the other, flanges on said cylinders, each flange having an upwardly opening socket at its top portion, three tie rods connecting together said flanges, one of said tie rods being arranged above said cylinders while the other two are arranged at the opposite sides of said cylinders, said one tie rod extending through said sockets formed in said flanges and having at both ends heads which engage the outer faces of the flanges bordering said sockets, said one tie rod being vertically removable from said sockets and from the space between the flanges, a die part connected to each plunger and adapted to slide along the other two tie rods, two rods connected at one end to each die part on either side thereof and heads at their other ends, fixed guides into which said rods with heads extend, springs encircling said rods and abutting at one end the inner sides of said heads and at the other end with abutment faces on said guides for opposing movement of said plungers towards one another, means for supplying fluid under pressure to the outer ends of said cylinders, valve means for controlling the supply of said fluid under pressure to the outer ends of said cylinders, a stand, and means for securing the outer ends of the other two tie rods to said stand without imparting axial constraint to the cylinder assembly.

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