May 5, 1931. A. G. DU FRANE ET AL 1,803,845

HYDRAULIC PRESS

Filed Nov. 13, 1928 2 Sheets-Sheet 1

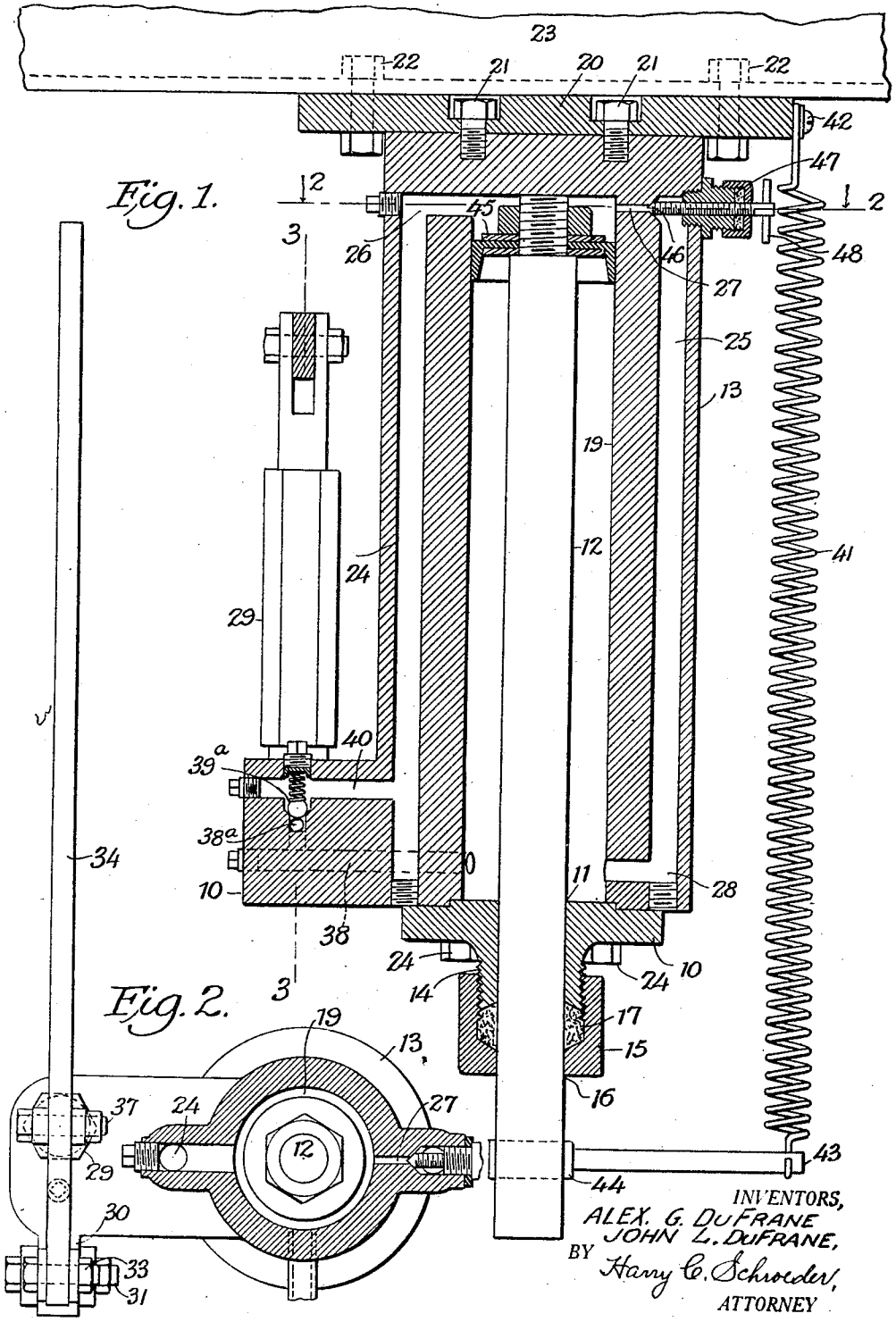


Fig. 1.

Fig. 2.

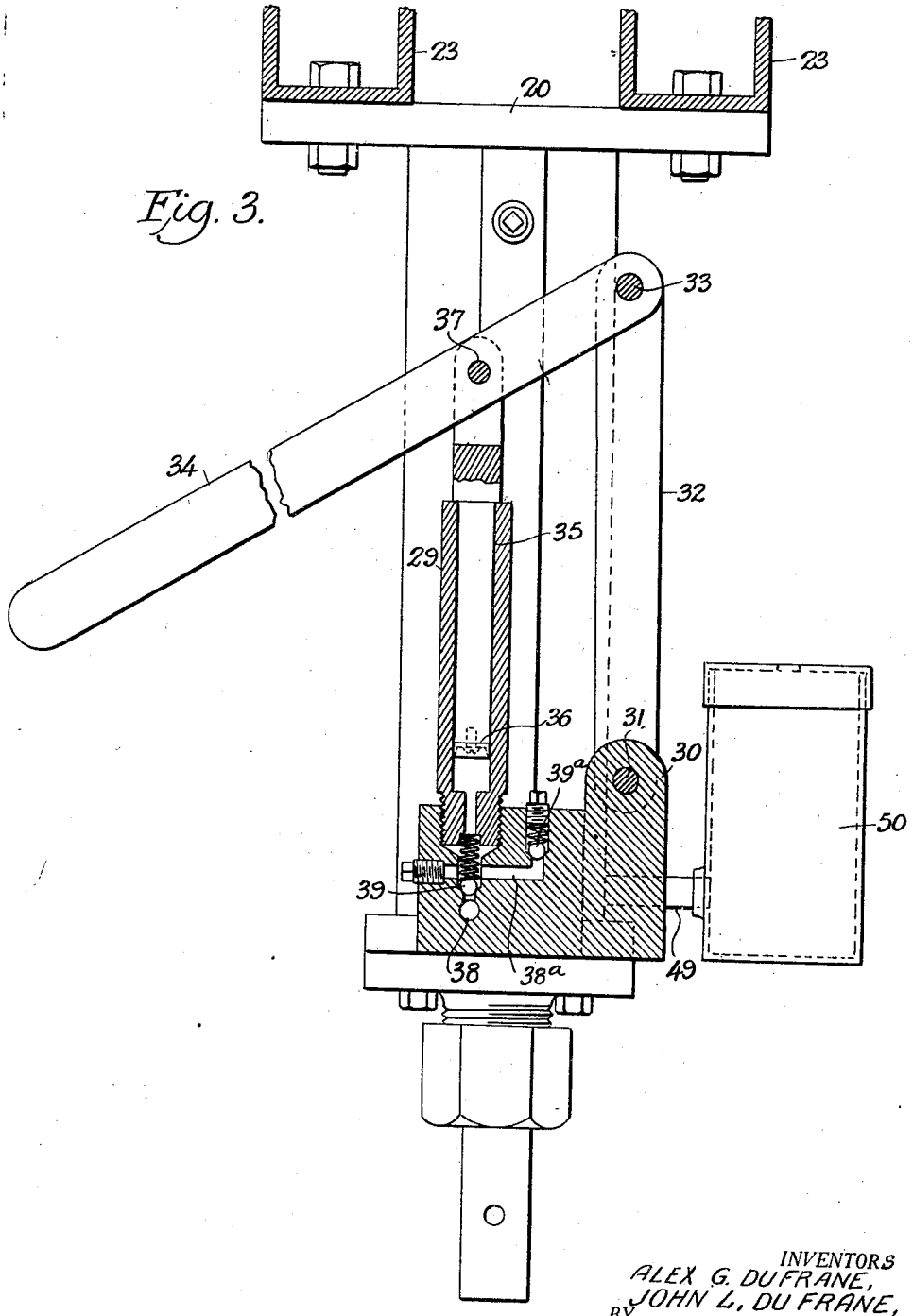
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Fig. 3.



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UNITED STATES PATENT OFFICE

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HYDRAULIC PRESS

Application filed November 13, 1928. Serial No. 319,046.

This invention relates to presses of the type which are adapted for use in machine shops and the like for forcing gears from shafts or other purposes for which it may be found adaptable.

An object of the invention is to provide a press of the nature described which is simple in construction, capable of developing a high degree of power, and inexpensive of manufacture.

The preferred embodiment of the invention is illustrated in the accompanying drawings forming a part of this application, although modifications may be resorted to without departing from the spirit of the invention or the scope of the appended claims.

Fig. 1 of the drawings is a vertical sectional view of the press device, showing the pump in elevation.

Fig. 2 is a horizontal sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a side elevation of the press showing in section the pump for creating pressure within the presser rod cylinder.

For a more comprehensive and clearer understanding of the invention reference will now be had to the reference characters of the drawings in which like reference characters indicate like parts throughout the several figures thereof. Reference character 10 indicates the base block having aperture 11 therethrough for the free reciprocal movement of presser rod 12 within cylinder 13. Base block 10 is provided with depending externally screw-threaded boss 14 for the reception thereon of screw-threaded cap 15 which is apertured as at 16 for the passage therethrough of presser rod 12 and provides a space intermediate the inner sloping face of the cap and the lower end of the boss for the insertion of packing 17. Cylinder 13 has central bore 19 therethrough for the reciprocal movement therein of presser rod 12 and is secured to supporting member 20 by bolts 21 which may be in turn secured by bolts 22 to an over-head girder 23. At its lower extremity cylinder 13 is secured to base block 10 by bolts 24. Cylinder 13 is provided with diametrically opposite bores 24 and 25 which communicate with bore 19 through ducts 26 and 27 at their upper ends, bore 25 communicating with bore 19 at its lower end through duct 28. Secured to base block 10 and in spaced relation to cylinder 13 is pump cylinder 29. Base block 10 is provided with upstanding lug 30 to which at its lower end link 32 is pivotally related as at 31 and is pivotally related at its upper end as at 33 to operating lever 34. Piston 35 within cylinder 29 has affixed to the lower end thereof plunger 36 and is pivotally related to operating lever 34 as at 37 at its upper end. Bore 19 of cylinder 13 may be filled with any suitable fluid such as, for instance, water or oil, though preferably oil. The upward movement of operating lever 34 will draw plunger 36 upward within the bore of cylinder 29 and cause the oil to flow from bore 19 through duct 38 past the spring pressed ball valve 39 into the pump cylinder 29.

When upon the downward movement of operating lever 34 valve 39 will be closed by the action of the spring and the plunger 36 will force the oil out of the pump cylinder through duct 38*a* against the action of the spring of valve 39*a* and through duct 40 into bore 24 upwardly through duct 26 into bore 19 tending to force the presser rod 12 downwardly and exert pressure upon an object at the outer end thereof, tractile spring 41 which is affixed at its upper end to supporting member 20 as at 42 and at its lower end to arm 43 of collar 44 affixed to presser rod 12 for returning the rod to the upper limit of its movement within bore 19 when the pressure of oil is relieved from cap 45 surmounting presser rod 12.

It will now be perfectly apparent that a continued operation of the pump lever 34 will exert a powerful pressure upon cap 45 of presser rod 19 outwardly of cylinder 13. When the desired pressure has been obtained by presser rod 12, the pumping operation is discontinued and when it is desired to release the pressure of the presser rod on an object, needle valve 46 is withdrawn from duct 27 by revolving operating screw 47 by turning knurled button 48, thus opening communication between bore 19 and bore 25 at the upper ends thereof which will permit of

the free circulation of the oil within bores 19, 24 and 25 and permit of the free upward movement of presser rod 12 within cylinder 18 to its normal position or upward limit of movement. Upon the upward movement of the plunger 36 within the pump, oil will be drawn from bore 19 at the lower end thereof through duct 38 past the spring tension valve 39 into the pump cylinder to be returned to the upper end of bore 19 by way of duct 38*a*, valve 39*a*, duct 40, bore 24, and duct 26 as previously described.

In order to keep the bores 19, 24, 25 and their associate ducts completely full of oil during the operation of the device for the purpose of continuing an even and unbroken pressure on the cap 45 of presser rod 12, there is provided auxiliary reservoir 50 from which oil may be drawn through pipe 49 therefrom and into bore 19 for continuously supplying the deficiency throughout the outward movement of presser rod 12.

Having thus described our invention, what we claim is:

1. A hydraulic press comprising a cylindrical member having a central bore therethrough closed at its ends, spaced apart bores within the wall of the cylindrical member and spaced from the central bore, communicating means between the bores within the walls of the cylinder and the central bore at their respective ends, a piston having a rod for reciprocal movement within the central bore and means for withdrawing a fluid from the bottom of the central bore and delivering it to the top thereof at a point above the piston.

2. A hydraulic press comprising a cylindrical centrally bored member closed at its ends having two spaced apart bores formed within the wall of the cylindrical member and spaced from the central bore, ducts between the two spaced apart bores and the central bore at their upper and lower ends, a valve for closing one of the ducts at the upper end of one of the bores and means for withdrawing a fluid from the bottom of the central bore and delivering it under pressure to the other of the spaced apart bores.

3. A hydraulic press comprising a centrally bored cylindrical member having spaced apart bores in its wall intermediate the central bore and the outer surface of the cylindrical member, said bores having communicating ducts at their upper and lower ends, a screw threaded needle valve for controlling the duct between two of the bores at their upper ends, and a reservoir having a pipe communicating with compression means for delivering a fluid under pressure into one of the bores.

4. A hydraulic press comprising a centrally bored cylindrical member having spaced apart bores in its wall intermediate the central bore and the outer surface of the cylindrical member, said bores having communicating ducts at their upper and lower ends, a screw-threaded needle valve for controlling the duct between two of the bores at their upper ends, a reservoir having a pipe communicating with compression means for delivering a fluid under pressure into one of the bores and means for compressing the fluid.

In testimony whereof we affix our signatures.

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