March 12, 1963 S. A. MURAWSKI 3,081,066

HYDRAULIC ELEVATING AND PRYING APPARATUS

Filed March 30, 1961 2 Sheets-Sheet 1

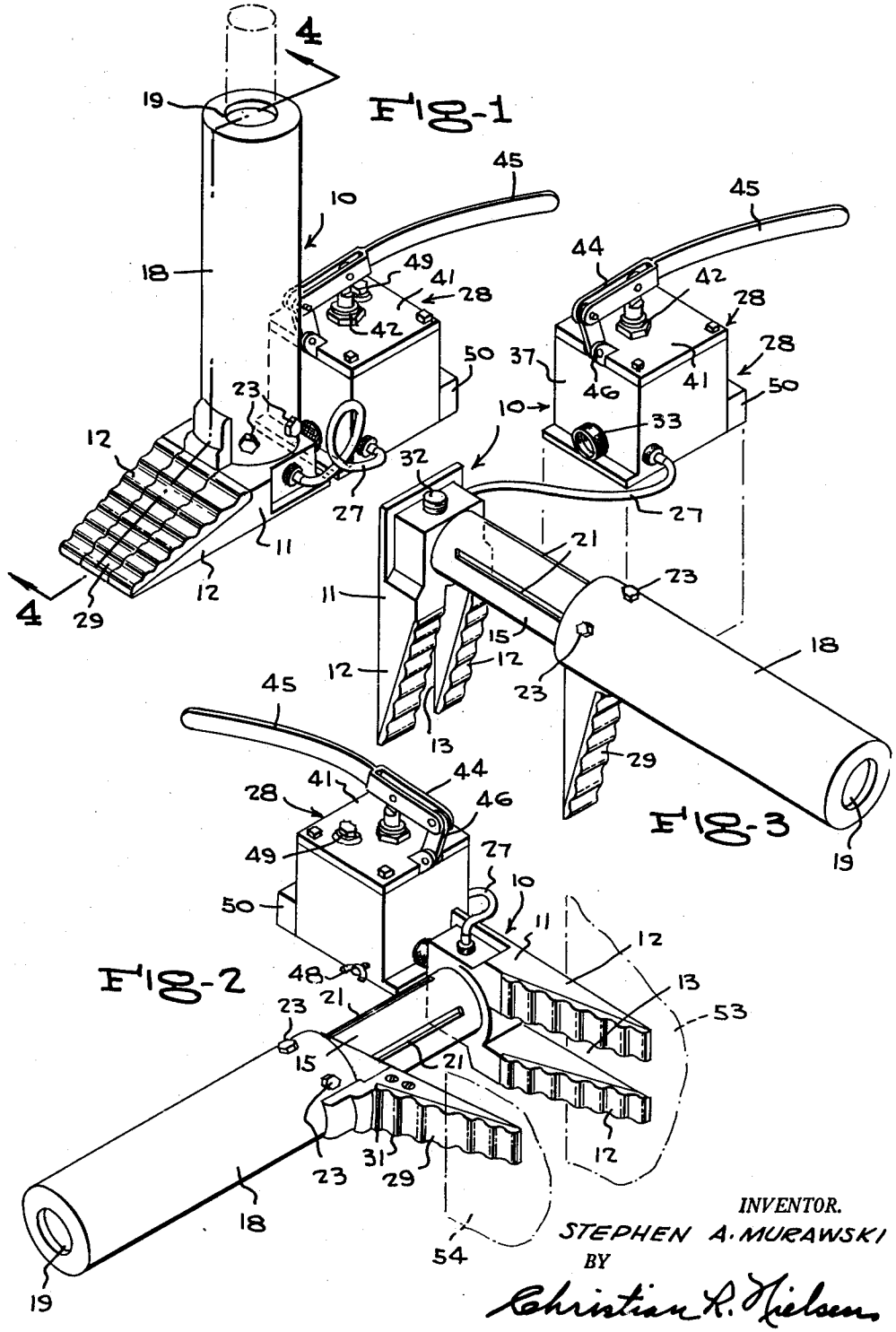


FIG-1

FIG-2

FIG-3

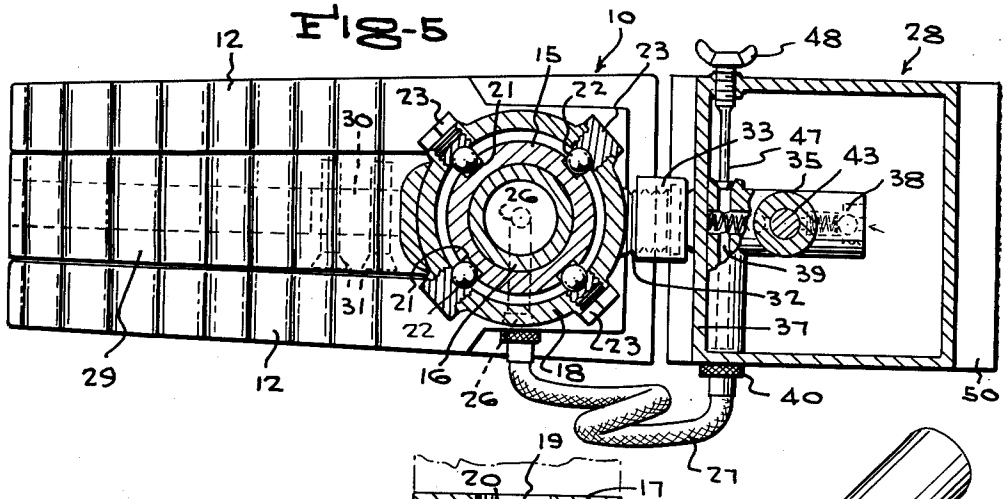
INVENTOR.
STEPHEN A. MURAWSKI
BY
Christian R. Nielsen
ATTORNEY

March 12, 1963 S. A. MURAWSKI 3,081,066

HYDRAULIC ELEVATING AND PRYING APPARATUS

Filed March 30, 1961 2 Sheets-Sheet 2

FIG-5



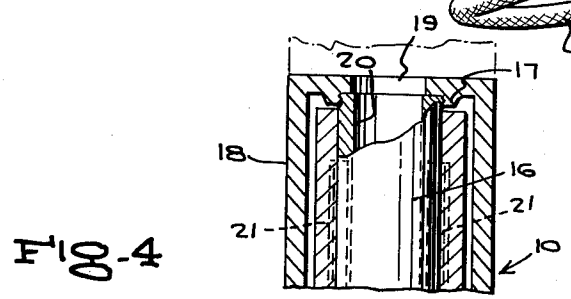


FIG-4

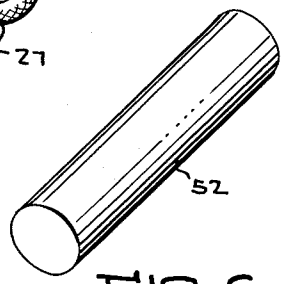
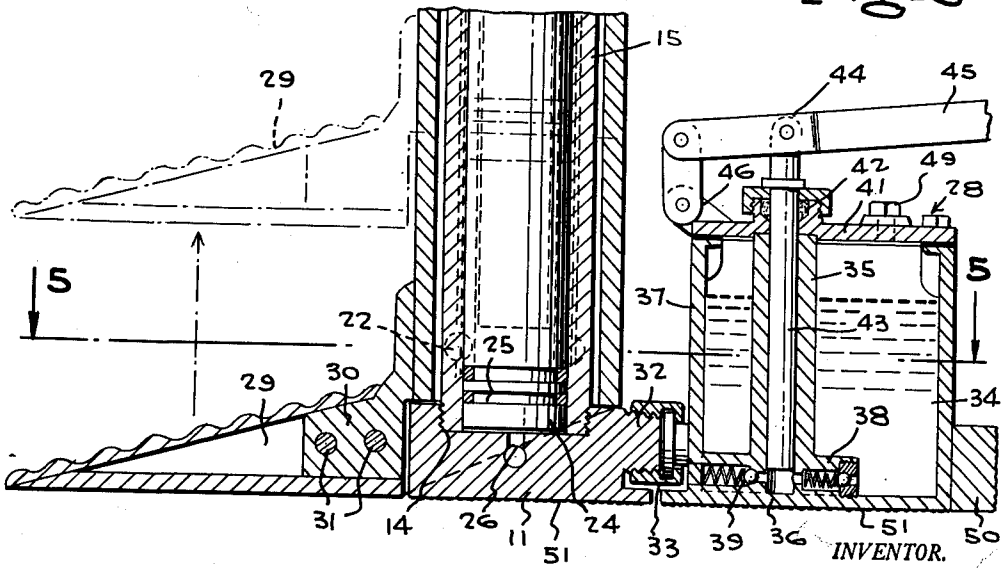


FIG-6



INVENTOR.
STEPHEN A. MURAWSKI
BY
Christian R. Nielsen
ATTORNEY

United States Patent Office 3,081,066
Patented Mar. 12, 1963

3,081,066

HYDRAULIC ELEVATING AND PRYING APPARATUS

Stephen A. Murawski, 13422 Ave. K, Chicago 33, Ill.

Filed Mar. 30, 1961, Ser. No. 99,402
3 Claims. (Cl. 254—93)

This invention relates to an hydraulic elevating and prying jack and it consists in the constructions, arrangements and combinations herein described and claimed.

It is the cardinal object of the invention to provide a hydraulic jack which may be employed as an elevating or lifting means, as in the case of a jack where a vertical lift is required and including structural features permitting the positioning of the operative jaws of the device so as to be variably arranged so as to be operative at various angles other than the vertical direction.

More specifically, it is an important object of the invention to provide an hydraulic jack wherein the hydraulic unit is swivelly connected to the jack member, permitting the jack to be adjusted to varying angles so that opposed jaws of the jack may be presented between a pair of objects to be pryed or moved apart.

It is also an important object of the invention to provide an hydraulically operated means wherein the combined jack and pryer is separable from the hydraulic unit, there being a flexible hose connected between the pump and the combined jack and pryer whereby the latter may be moved to remote points for operating upon work which might not otherwise be possible.

A further important object of the invention is the provision of a base member of the combined jack and pryer which is provided with a pair of spaced parallel jaw members, the jaws being corrugated and of tapered formation in a direction outwardly and downwardly from the vertical axis of the base, the base further mounting a sleeve for reciprocably mounting a sleeve, the latter being provided with a single jaw member which is tapered and corrugated and being complemental to a position between said pair of spaced parallel jaws of the base member.

Additional objects, advantages and features of invention will be apparent from the following description, considered in conjunction with the accompanying drawings, wherein,

FIGURE 1 is a perspective view of the combined hydraulic elevating and prying apparatus.

FIGURE 2 is a perspective view of the device illustrating one position of use.

FIGURE 3 is a similar view illustrating the hydraulic pump in a separated state with respect to the jack and pryer unit.

FIGURE 4 is a vertical section taken on the line 4—4 of FIGURE 1.

FIGURE 5 is a cross section taken on the line 5—5 of FIGURE 4, and

FIGURE 6 is a perspective view of a rod which may be employed to increase the height of lifting movement of the jack.

Referring more particularly to the drawings, there is illustrated a combined hydraulic elevating and prying apparatus generally indicated by the reference character **10**. The elevating and prying apparatus comprises a base member **11** which has integral-formed therewith a pair of jaw members **12**, which jaws are spaced apart and extend in parallel relation forming a space **13**. The jaws **12** are corrugated upon the upper surfaces thereof and are tapered outwardly and downwardly from a vertical axis of the base member **11**.

Medially of the base member **11** a threaded recess **14** is formed for receiving the threaded end of an upright sleeve **15** for reciprocably mounting a ram sleeve **16**

which as clearly shown in FIGURE 4 is threadedly connected to a flange **17** of a reciprocating sleeve **18**. The sleeve has an opening **19** which is in alignment with the bore **20** of a ram sleeve **16**.

From the above description considered in conjunction with FIGURE 4, it will be seen that the ram sleeve **16** is slidably mounted in the upright sleeve **15** and that the sleeve **18** is similarly mounted about the upright sleeve **15**, and since the ram sleeve **16** is connected to the flange **17** of the sleeve **18**, the two will reciprocate in unison under application of hydraulic pressure, as will be described hereinafter.

It will be seen that the sleeve **18** is of a diameter considerably greater than the upright sleeve **15**, in order to eliminate frictional contact between the two and that the ram sleeve **16** is slidably mounted in the upright sleeve **15**. However, in order to fully support reciprocating movements of the sleeve **18**, the upright sleeve **15** is formed upon its exterior surface with any suitable number of vertically disposed passage-ways **21** for reception of ball bearings **22**, which are retained therein by means of suitable screws or retaining means **23** mounted in openings formed in the sleeve **18**. The ball bearings **22** and retaining means **23** are preferably positioned at a lower portion of the sleeve **18** so that the sleeve **18** will be properly supported throughout the full movement of the ram sleeve **16**; and further with the ball bearings engaged in the passage-ways, rotation axially about the upright sleeve **15** is prevented.

The lower portion of the ram sleeve **16** is closed forming a piston portion **24** which is provided with suitable packing rings **25** to form a fluid tight seal within the sleeve **15**.

The base **11** is formed with a fluid inlet **26** positioned beneath the piston **24**, the inlet including a threaded nipple for establishing connection of a flexible hose **27** of an hydraulic pump unit **28** as will presently be described.

The sleeve **18** is provided with a prying and lifting jaw **29** similar in contour and construction to the jaws **12**, but of such dimensions as to be received in the space **13** between the jaws **12**. The jaw **29** is detachably mounted on a lug **30** positioned at the lower end of the sleeve **18** by means of bolts **31**.

In order that the combined jack and pryer may be moved to remote points with respect to the hydraulic pump unit **28**, as well as to permit movement of the jack and pryer to various angular relations with respect to the hydraulic pump unit, the base **11** is provided with a projecting threaded stud **32** and the hydraulic pump unit is formed with a swiveled coupling sleeve **33**, which connection will permit movement of the jack and pryer from a vertical position as shown in FIGURE 1 to a horizontal position shown in FIGURE 2; or the jack and pryer may be rotated to a position opposite to that shown in FIGURE 2. Also, as shown in FIGURE 3, the jack and pryer may be separated by uncoupling the sleeve **33**, permitting use of the jack and pryer at remote positions from the hydraulic unit **28**.

Reference is now made to FIGURES 4 and 5 of the drawings for an understanding of the construction of the hydraulic pump unit. The unit **28** comprises an oil reservoir **34** of a required capacity, interior of which there is formed a vertically disposed pump cylinder **35** formed integrally with the bottom wall **36** and adjacent wall **37** of the reservoir. The pump cylinder **35** includes a valve controlled oil inlet **38** and a similarly controlled oil outlet **39**, the latter having a threaded fitting **40** for connection of the flexible hose **27**.

A cover **41** is suitably bolted to the upper open end of the reservoir and is provided with a packing glad **42** for reciprocably mounting a piston **43**, the upper end of

which has an apertured end for pivotally mounting a fork 44 of an operating handle 45. The fork 44 is pivotally mounted in a bracket 46.

The oil inlet 39 is formed with a relief valve 47 which is movable into open and closed positions with respect to the inlet by means of a suitable handle 48 exteriorly of the reservoir. This valve is employed when the fluid is to be returned to the reservoir.

The reservoir 23 is provided with a filler opening and closure plug 49 for filling or replenishing the oil supply of the reservoir.

Occasion may arise in the use of the jack and pryer, where it is necessary to employ a hammer to force the jaws 12 and 29 between objects which are to be separated, and to this end the base of the reservoir at the rear thereof is provided with an anvil 50 to receive blows from a hammer.

The lower outer face of the base 11 and the bottom wall 36 of the reservoir may be roughened or serrated as at 51 to insure stable support of the jack and pryer when in use.

In the event that a greater elevation of the jack is required, an extension rod 52 may be inserted through the opening 19 of cylinder 18, the rod passing through the ram sleeve 16 and resting upon the lower closed end of the ram sleeve.

In the operation of the combined jack and pryer, where a straight vertical lift is required, the jack will be arranged as in FIGURE 1 with the sleeve 18 directly beneath the object to be elevated, or the object to be moved or elevated may be engaged by the jaw 29. By actuating the handle 45, the piston 43 will be raised vertically of the pump cylinder 35 creating a suction to open the inlet valve 38 and close outlet valve 39. Upon a full upstroke of the piston oil will be drawn into the pump cylinder and the spring pressed inlet valve will be closed. Upon downward movement of the piston oil in the pump cylinder will be forced through the outlet valve 39, into and through the fitting 40, the oil passing through the flexible conduit 27 and discharging beneath the ram cylinder 16 by way of the inlet 26. The ram cylinder and associated sleeve 18 will accordingly be moved outwardly of the sleeve 15. The above operation will be repeated until the necessary elevation has been attained. It will also be apparent that the jaw 29 provides a second load supporting means which may be required in certain situations.

If an exceedingly high elevation is required, the extension rod 52 may be inserted into the ram sleeve 16 prior to elevation of an object.

The prying operation of the jack is best seen in FIGURE 2, where the numeral 53 represents a portion of heavy material such as a vehicle body and the portion 54, the door of the vehicle and these two portions are to be moved laterally with respect to each other, in order that access may be had to the interior of the vehicle. In such a case, the combined jack and pryer is rotated about the swiveled coupling sleeve 33 in order that the jaws 12 and the jaw 29 may be properly presented between the objectives 53 and 54. When so positioned the hydraulic pump unit is actuated to effect separation of the two objects.

Where the unit must be employed and requires detachment, this is readily accomplished by merely uncoupling the sleeve 31 as shown in FIGURE 3.

While I have shown and described a preferred form of the device, this is by way of illustration only, and I consider as my own, all such modifications in construction as fairly fall within the scope of the appended claims.

I claim:

1. A combined hydraulic elevating and prying apparatus comprising a base member, an upright sleeve mounted on said base member, a ram cylinder reciprocably mounted within said upright sleeve, a sleeve freely fitted about said upright sleeve for reciprocating movements simultaneously with said ram cylinder, ball bearing members interposed between said upright sleeve and said freely fitted sleeve, said base member having a pair of spaced parallel jaw members forming a lateral extension of said base member, a jaw member carried by said freely fitted sleeve and normally occupying a position between said spaced jaw members, an hydraulic unit having a flexible hose connected to a fluid inlet formed in said base member for discharge of fluid beneath said ram cylinder, a threaded stud on said base member and said hydraulic unit being swivelly and detachably connected to said threaded stud.

2. A combined hydraulic elevating and prying apparatus comprising a base member, an upright sleeve mounted on said base member, a ram cylinder reciprocably mounted within said upright sleeve, a sleeve freely fitted about said upright sleeve for reciprocating movements simultaneously with said ram cylinder, said upright sleeve having a plurality of vertically disposed grooves, a ball bearing means positioned within each groove and in rolling contact with said freely fitted sleeve, said base member having a pair of spaced parallel jaw members forming a lateral extension of said base member, a jaw member carried by said freely fitted sleeve and normally occupying a position between said spaced jaw members, an hydraulic unit having a flexible hose connected to a fluid inlet formed in said base member for discharge of fluid beneath the ram cylinder, a threaded stud on said base member and said hydraulic unit being swively and detachably connected to the threaded stud of said base member.

3. The structure as defined in claim 2 wherein said ram cylinder is provided with an upper open end for reception of an extension rod.

References Cited in the file of this patent

UNITED STATES PATENTS

1,920,285	Wilkins et al.	Aug. 1, 1933
2,165,367	Gormley et al.	July 11, 1939
2,314,589	Mandl	Mar. 23, 1943
2,654,568	Pine	Oct. 6, 1953
2,674,438	Dalton	Apr. 6, 1954
2,926,888	Schultz	Mar. 1, 1960
2,927,769	Fantaci	Mar. 8, 1960
3,038,510	Vorkoeper et al.	June 12, 1962