Jan. 24, 1967 J. B. CHRISTENSEN 3,299,496

TOOL FOR COUPLING HYDRAULIC HOSES

Filed March 17, 1965

FIG. 1

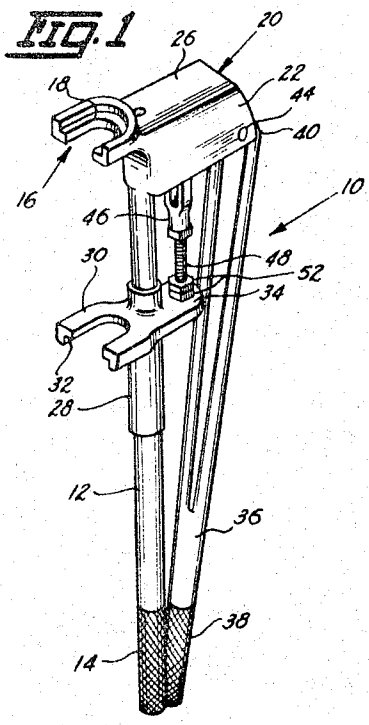


FIG. 2

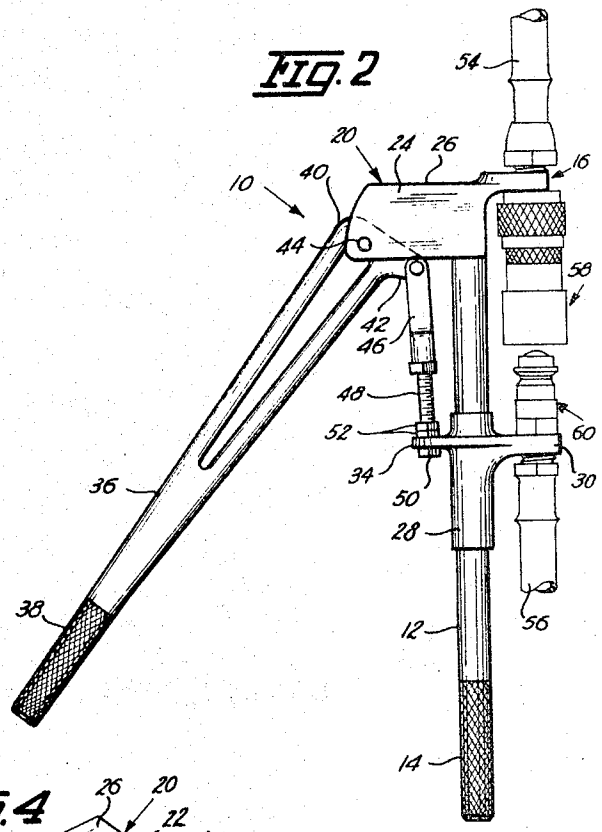


FIG. 3

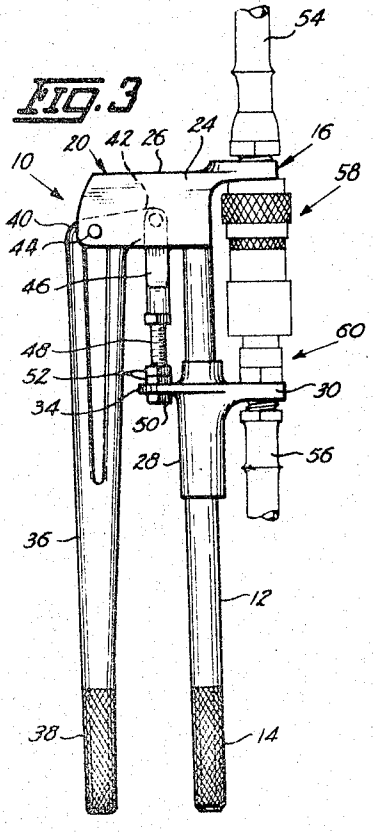


FIG. 4

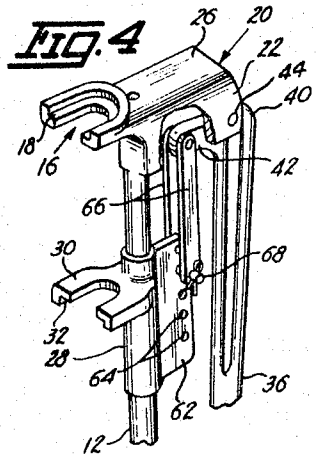
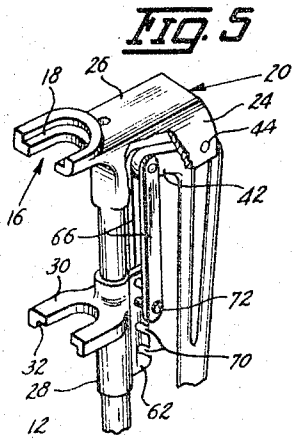


FIG. 5



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TOOL FOR COUPLING HYDRAULIC HOSES

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This invention relates to new hand tool and more particularly to an improved tool to simplify and facilitate the coupling of hydraulic hoses especially when they are under hydraulic pressure.

In farming operations, for example, a variety of hydraulically operated equipment, usually powered from a tractor, is in general use and this requires the coupling and uncoupling of hydraulic hose frequently as is well known. Such coupling must often be performed while the hoses are under pressure and this at best is a difficult task and time consuming. It is accordingly one of the important objects of this invention to provide an easy to use hand tool that has particular usefulness in coupling hydraulic hoses under pressure and can, of course, be used efficiently to couple such hoses when not under pressure.

Another object contemplated herein is the provision of a new tool as characterized that can be quickly and easily adjusted relative to hose fittings of different size and manufacture.

Further objects herein are to provide a tool of the above class that is convenient to carry, easy to use and extremely efficient for its intended purpose.

To attain these objects and such further objects as may appear herein, or be hereinafter pointed out, reference is made to the accompanying drawings forming a part hereof, in which:

FIG. 1 is a perspective view showing a preferred embodiment of this new tool,

FIG. 2 is a side view thereof showing this tool being applied to hydraulic hoses preparatory to coupling the same,

FIG. 3 is a side view of this tool after it has been manipulated to couple a pair of hydraulic hoses, and

FIGS. 4 and 5 are respective perspective views each showing a different modified adjusting means to adapt this tool to hose fittings of different size and manufacture.

Referring to the drawings, this new tool designated generally by the numeral **10** includes an elongated handle **12** which is preferably of tubular or rod material but which may be a bar or the like if desired. The lower end or handgrip end of handle **12** is knurled as at **14** for ease in gripping and the upper end of the handle terminates in a transversely projecting bifurcated jaw **16** that is rabbeted **18** on its upper side as seen in FIG. 1. Also carried at the upper end of handle **12** is a support member **20** which is disposed to project from handle **12** in a direction diametrically opposite to jaw **16**. Member **20** is in the form of the parallel spaced support plates **22** and **24** and may include the top plate **26** connected thereto for purposes of rigidity whereby member **20** is channel shaped with its open side at the bottom.

A sleeve **28** is slidably disposed on handle **12** and carries a bifurcated jaw **30** at one side similar in shape to jaw **16** and movable with sleeve **28** on handle **14** in longitudinal alignment with jaw **16**. The underside of jaw **30** is rabbeted as at **32** in a similar manner to rabbet **18** on jaw **16**. Also on sleeve **28** and projecting therefrom in a direction opposite to jaw **30** is an apertured ear **34** disposed in alignment with the open bottom side of a support member **20**. As can be seen in FIG. 1, jaw **30** and ear **34** may be integrally formed and may be designed for slidable arrangement on handle **12** without a separate sleeve **28** although the use of such a sleeve as shown or perhaps one even shorter in length is preferred to eliminate any binding on handle **12** during movement of jaw **30** relative thereto as will appear.

For purposes of moving jaw **30** toward and away from jaw **16** I provide the elongated handle-like lever **36** having the knurled handgrip portion **38** on its lower end to complement handle portion **14** and having its opposite or upper end formed so as to define a heel portion **40**, and a beak or toe portion **42** projecting angularly from a longitudinal alignment with the main lever body **36**. Lever **36** is pivotally mounted at heel portion **40** intermediate the outer end portions of plates **22** and **24** by means of a pin **44** so that the toe portion **42** extends toward handle **12** as best seen in FIG. 2. A clevis member **46** is pivotally secured at one end to toe **42** so as to depend therefrom and an adjusting screw arranged relative to the other end of clevis **46** is engaged through ear **34** by nut **50**. Locknuts **52** are provided to hold screw **48** against rotation relative to clevis **46** at times in a well known manner.

From the above description it will be appreciated that elevation of lever **36** will move jaw **30** on handle **12** away from jaw **12** and the lowering of lever **36** toward handle **12** will move jaw **30** toward jaw **16**. Thus this tool can be operated similar to a pair of pliers but with considerably more leverage acting on jaw **30**. In the upward movement of lever **36** as seen in FIG. 2, the clevis **46** and screw **48** will be slightly inclined from a parallel plane with handle **12** and to accommodate this slight motion, the aperture (not shown) in ear **34** is oversized relative to the diameter of screw **48**.

To illustrate the use of tool **10** as shown as described, reference is made to FIGS. 2 and 3 where a pair of hydraulic hoses **54** and **56** are shown with their well known respective fittings **58** and **60**. To couple hoses **54** and **56**, jaw **16** is embracingly engaged with a suitable section of the fittings **58** and jaw **30** is similarly engaged relative to fittings **60**. It will be understood and appreciated that fittings **58** and **60** will include one or more nut components as is well known and jaws **16** and **30** are so arranged that their smooth opposed surfaces, being the lower surface of jaw **16** and the upper surface of jaw **30** will abut certain of the fitting components and the rabbet portions **18** and **32** will provide a seat for any fitting components adjacent thereto. Screw **48** may, of course, be lengthened or shortened to accommodate the location of jaws **16** and **30** to fittings of different sizes and manufacture. With tool **10** thus arranged as shown in FIG. 2, the movement of lever **36** to the position shown in FIG. 3 can be accomplished very easily and will result in hoses **54** and **56** being quickly coupled even when under pressure.

With reference now to FIGS. 4 and 5, I have shown variations for adjusting the distance between jaws **16** and **30**. More particularly in FIG. 4, ear **34** is replaced by an elongated plate **62** provided with a plurality of spaced aligned holes **64**. Likewise, clevis **46** is replaced by a pair of parallel links **66** pivotally attached at one end to toe **42** so as to depend therefrom whereby their other ends may be selectively engaged in any desired hole **64** by means of a removable pin **86**. In FIG. 5, the holes **64** of FIG. 4 are replaced by inclined notches **70** which may be selectively engaged by a fixed pin **72** connecting the lower ends of links **66**. Aside from these slight modifications which can be readily understood from the description and drawings, the operation of the devices shown in FIGS. 4 and 5 are the same as that given for FIGS. 1–3. Accordingly, from the foregoing, it is thought a full understanding of the construction and operation of this invention will be had and the advantages of the same will be appreciated.

It will be understood that the phraseology employed

herein is for the purpose of description and not for limitation and that modifications and changes can be made within the scope of what is claimed, without departing from the spirit and purpose thereof.

I claim:

1. In a tool for coupling complementary fittings on hydraulic hoses, comprising:
an elongated handle,
a hose engaging first jaw on one end of said handle and disposed to project perpendicularly therefrom,
a sleeve slidably disposed on said handle,
a second hose engaging jaw carried by said sleeve so as to be movable therewith,
said second jaw disposed to project perpendicularly from said sleeve and in alignment with said first jaw,
a support carried by said handle opposite said first jaw,
a lever pivotally attached at one end to said support so that said lever is movable toward and away from said handle, and
linkage means connecting the pivotally attached end of said lever to said sleeve whereby said second jaw can be selectively moved toward and away from said first jaw by movement of said lever.

2. In a tool for coupling complementary fittings on hydraulic hoses, comprising:
an elongated handle,
a hose engaging fixed jaw on one end of said handle,
a hose engaging movable jaw movably mounted on said handle for cooperative action with said fixed jaw,
a lever pivotally attached near one end to said handle and near said fixed jaw, and
a lengthwise adjustable link means pivotally secured respectively to said movable jaw and to said lever at its pivoted end whereby movement of said lever toward and away from said handle will respectively move said movable jaw toward and away from said fixed jaw.

3. In a tool for coupling complementary fittings on hydraulic hoses, comprising:
an elongated handle,
a fixed bifurcated jaw carried at one side of one end of said handle,
a support plate carried at said end of said handle opposite to said fixed jaw,
a movable jaw member slidably disposed on said handle and including
a bifurcated jaw portion in alignment with said fixed jaw, and
an apertured ear in alignment with said support plate,
a lever pivotally attached at one end to said support plate, and
lengthwise adjustable linkage operatively connected to said apertured ear and the pivoted end of said lever.

4. In a tool for coupling complementary fittings on hydraulic hoses, comprising:
an elongated handle,
a fixed bifurcated jaw carried at one side of one end of said handle,
a support plate carried at said end of said handle opposite to said fixed jaw,
a movable jaw member slidably disposed on said handle and including
a bifurcated jaw portion in alignment with said fixed jaw, and
an adjustment plate having a plurality of spaced holes and in alignment with said support plate,
a lever pivotally attached at one end to said support plate, and
linkage means operatively connected to the pivoted end of said lever and selectively attached to said adjustment plate through one of said holes.

5. In a tool for coupling complementary fittings on hydraulic hoses, comprising:
an elongated handle,
a fixed bifurcated jaw carried at one side of one end of said handle,
a support plate carried at said end of said handle opposite to said fixed jaw,
a movable jaw member slidably disposed on said handle and including
a bifurcated jaw portion in alignment with said fixed jaw, and
an adjustment plate having a plurality of spaced notches and in alignment with said support plate,
a lever pivotally attached at one end to said support plate, and
linkage means operatively connected to the pivoted end of said lever and selectively attached to said adjustment plate by engagement in one of said notches.

6. In a tool for coupling complementary fittings on hydraulic hoses, comprising:
an elongated handle,
a fixed bifurcated jaw carried at one side of one end of said handle,
a support plate carried at said end of said handle opposite to said fixed jaw,
a movable jaw member slidably disposed on said handle and including
a bifurcated jaw portion in alignment with said fixed jaw, and
a link engaging member, in alignment with said support plate,
a lever pivotally attached at one end to said support plate,
link means operatively connected to said link engaging member and the pivoted end of said lever, and
a rabbet on each jaw on its respective unopposed side relative to the other jaw.

7. A device as defined in claim 6 including means to lengthwise adjust said link means for selectively varying the widest point of separation between said jaws.

8. In a tool for coupling complementary fittings on hydraulic hoses, comprising:
an elongated handle,
a fixed bifurcated jaw carried at one side of one end of said handle,
a support plate carried at said end of said handle opposite to said fixed jaw,
a movable jaw member slidably disposed on said handle and including
a bifurcated jaw portion in alignment with said fixed jaw, and
a link engaging member, in alignment with said support plate,
an elongated lever having a beak-like projection on one end,
said lever pivotally connected near said beak-like projection to said support plate, and
link means operatively connecting said link engaging member and said beak-like projection.

9. A device as defined in claim 8 including means to lengthwise adjust said link means for selectively varying the widest point of separation between said jaws.

References Cited by the Examiner

UNITED STATES PATENTS

331,147	11/1885	Mallinckrodt	29—237
1,894,835	1/1933	Smith et al.	29—234
2,958,125	11/1960	Nichols	29—237

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