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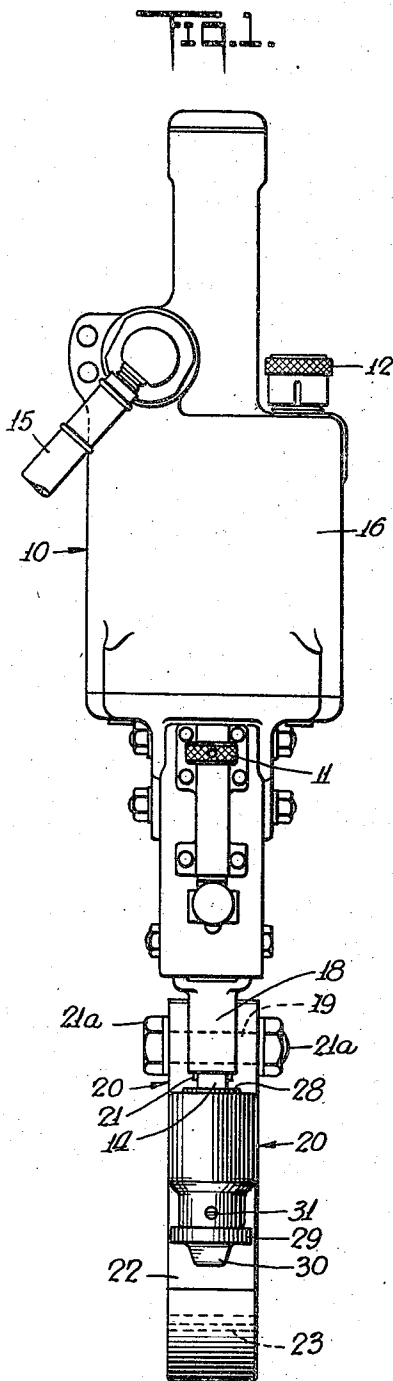
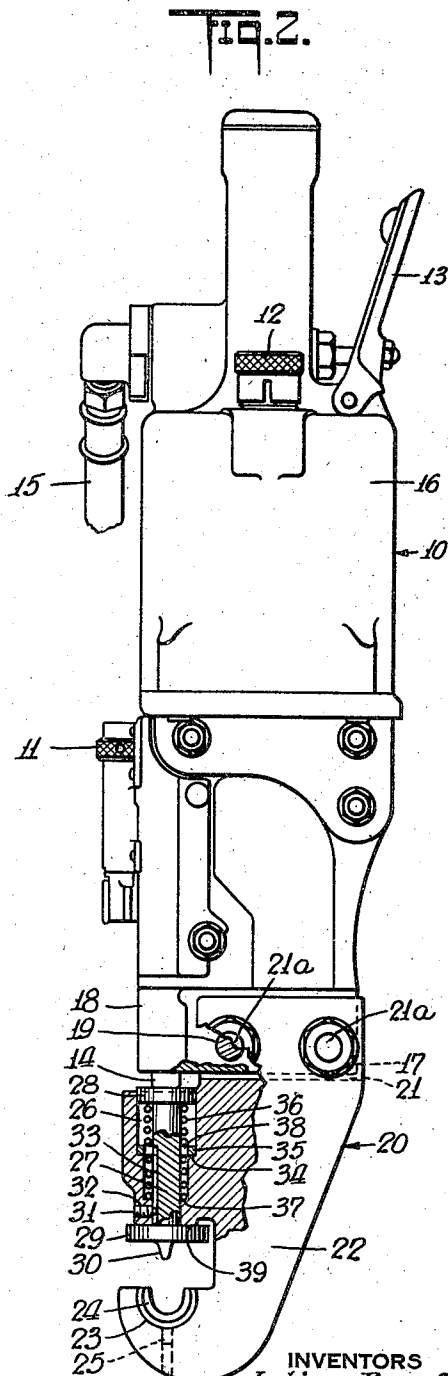
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PORTABLE COMPRESSING TOOL AND DETACHABLE PRESS

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3 Sheets-Sheet 1



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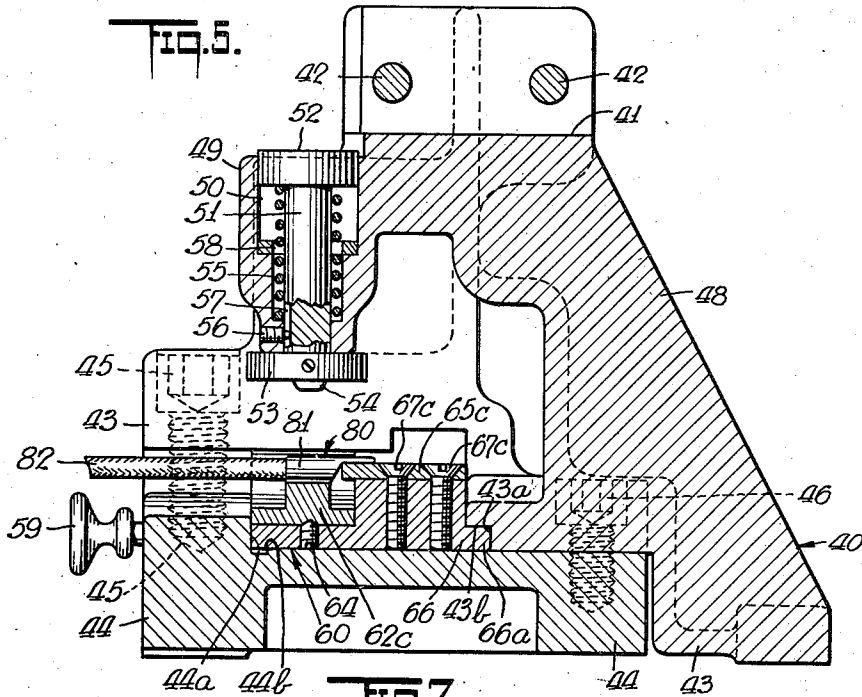
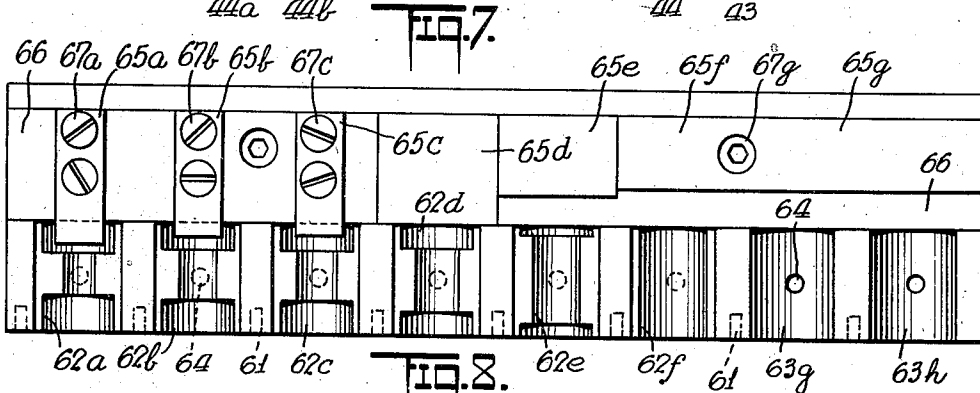
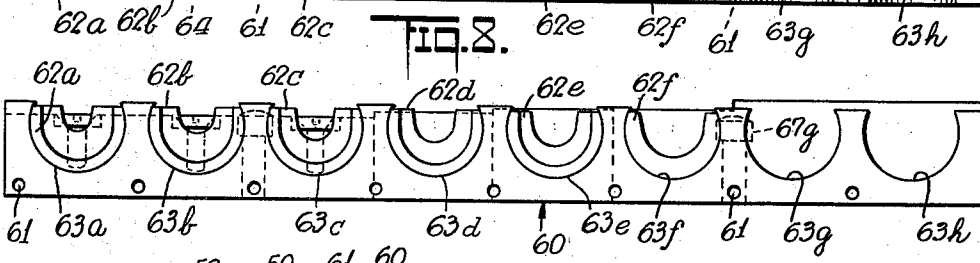
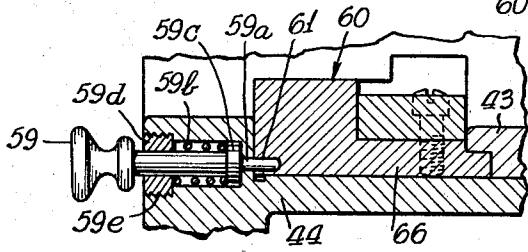
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PORTABLE COMPRESSING TOOL AND DETACHABLE PRESS

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3 Sheets-Sheet 3



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PORTABLE COMPRESSING TOOL AND
DETACHABLE PRESS

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2 Claims. (Cl. 153—1)

1

This invention relates to a portable compressing tool and press therefor, and more particularly to a portable compressing tool upon which is mounted a detachable press platform for converting the tool into a self-contained press.

One object of this invention is to provide a tool which may be independently used for various purposes, as for squeezing rivets, etc., and additionally useful in combination with a detachable press for various types of press operations.

A further object of our invention is to provide a detachable press having a sliding die arrangement so that various types or sizes of dies are immediately available for various uses depending on specific requirements.

Another object of this invention is to provide a combination tool and press which can exert sufficient pressure on a cable connector or terminal to establish an excellent electrical and mechanical joint.

Still another object of this invention is to provide attachments for conventional types of tools, such as rivet-squeezers which will be useful for making cable connections without any special adjustments or changes in the tool itself.

Other objects of this invention are, to provide a pneumatic press, which can be used to indent various sizes of cable connectors with adjustments only in the press attachment and not in the pneumatic press; to provide a pneumatic press which can be used for rapid installation of large numbers of connectors or terminals on electrical cables of various sizes; to provide a portable tool which can be used to install terminals or connectors on cable with a minimum of time and effort expended by the operator; to provide a pneumatic press which can be quickly and easily adjusted to provide for changes in the size of cable connectors to be indented; to provide an arrangement of dies which are mounted in a single rack for insertion into the press whereby any size or type die may be immediately selected and locked into position for use; to provide combination male and female die parts, which are removable as a single unit; to provide a plurality of male and corresponding female die parts, wherein the selection and positioning of one part will automatically result in the proper positioning of the other.

We accomplish these and other objects and obtain our new results as will be apparent from the device described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing, in which:

2

Fig. 1 illustrates a front view of a portable compressing tool upon which is mounted a single die unit press platform.

Fig. 2 is a side view of the same, partially in section.

Fig. 3 is a front, partially sectioned view of a portable compressing tool upon which is mounted a multi-unit press platform.

Fig. 4 is a side view of the same.

Fig. 5 is a cross-sectional view of the multi-unit press platform taken along the line 5—5 of Fig. 3.

Fig. 6 is a sectional view of a portion of the device illustrated in Fig. 3, taken along the line 6—6.

Fig. 7 is a plan view of multi-unit female die assembly inserted into the press as a single unit.

Fig. 8 is a front view of the same.

Fig. 9 is a front view of a multi-unit male and female die unitary assembly.

Fig. 10 is a side view of the press with the multi-unit male and female die assembly inserted therein.

Fig. 11 is a perspective view of a terminal attached to a cable by indentation, as produced in the press.

Referring more particularly to the drawings, Figs. 1 and 2 illustrate a portable plunger operated type of hand tool 10, to which is attached a press platform 20. While any type of plunger operated tool will be satisfactory, we have selected for purposes of illustration a pneumatically operated rivet squeezer used in the aviation industry. This squeezer is portable and light, weighing approximately 5 to 10 pounds, and exerts pressures up to 12,000 on an air line pressure of 80 to 100 pounds. This tool is provided with suitable adjustments for stroke and pressure, indicated by 11 and 12 respectively, with operating lever 13, for setting the plunger 14 into operation, which is actuated by the compressed air entering through line 15 into the pneumatic compression chamber 16.

The rivet squeezer is provided with a tongue 17, made integral with the frame 18. A plurality of apertures 19 therein enables the press platform 20 to be attached to tongue 17 by positioning it in groove 21 and locking thereto by bolts 21a.

The press 20 comprises a U-shaped head 22 provided with a groove 23 in the lower mouth of the U, into which is inserted the female die piece 24, secured in position by set screw 25. It should be noted that any suitable die parts may be employed for performing the selected press

3

operation. In this and the following devices, we have illustrated a male and female die part which is designated to indent a tubular connector sleeve to a conductor, in a well known manner.

The upper portion of the U is provided with a vertical, cylindrically shaped recess 26 into which is mounted a cylindrical piston 27, having at the upper portion thereof, an impact plate 28, and at the lower portion thereof a male die holder 29, provided with a replaceable male die 30. A set screw 31 is positioned in the threaded aperture 32 of the U-shaped head, and extends into a recess 33 of the piston 27 for preventing rotation thereof with respect to the head 22 insuring an accurate positioning of the two die portions 30 and 24.

A circumferential seat 34 is provided in the recess 26, upon which is mounted a hardened washer 35, which limits the downward movement of the piston 27 and its plate 28. A spring 36 is positioned between the plate 28 of the piston and the shoulder 37 in the recess, passing through aperture 38 in washer 35, for returning the piston 27 and male die holder 29 to the uppermost position, with the die holder 29 abutting the upper surface 39 of the mouth of the U-shaped head 22.

In operation, the pneumatic tool 19 is connected to its pressure source, not shown, through the air line 15. The adjustments 11 and 12 providing for proper stroke and pressure are properly positioned for the type of work and length of stroke desired.

The press platform 20 is then bolted to the tool, as previously described, with the selected die parts locked in position.

The lever 13 is then operated so as to propel plunger 14. The plunger resting directly on the piston plate 28, projects the piston 27 with die holder 29 and die part 30 attached thereto into operating motion. The particular male die 30 and female die piece 24 are designed to compress a conductor to a connector sleeve in a well known manner as illustrated in Fig. 11, which will be subsequently described.

In Figs. 3 and 4, the tool 10 is shown attached to a press 40 provided with a multi-unit die rack 60.

The press 40 is shown with a groove 41 formed in the upper portion of the press to receive the tongue 17, which is bolted to the press by means of bolts 42.

The press is, for convenience, cast into two sections 43 and 44 to permit milling out the surfaces coming in contact with the die rack 60, which is slid laterally into horizontal position. The press section 43 includes the upper part and back of the frame, as indicated in Fig. 4, which is locked to the front and back lower base section 44 by means of bolts 45 and 46 respectively, shown in dotted lines in Fig. 5.

The upper section 43 is further cast to provide a frontal opening 47 shown in Fig. 3 with a central backing rear portion 48 extending from the upper portion of the frame to the lower portion thereof as shown in Fig. 4. Vertically positioned in the upper section 43 of the frame press 40 is the piston containing portion 49, which is provided with a recess 50, containing the piston 51, and associated parts, such as impact plate 52, male die holder 53, male die 54, return spring 55, set screw 56, corresponding groove 57, and piston washer 58.

The construction of parts is similar to the piston mechanism shown in Fig. 2 and previously described.

4

A die rack locking knob 59, is shown in Figs. 5 and 6, which comprises the extending pin 59a, extending into the aperture 61 of the die rack 60. The pin 59a is held in position against the action of spring 59b, which employs the pin shoulder 59c and the set pin plug 59d, threaded into aperture 59e of the lower frame 44 of the press. Thus the die rack 60 may be held in the selected position to prevent movement thereof during the operation of the press 40.

The die rack 60 comprises a substantially rectangular block with a number of die parts 62a to 62f securely positioned in grooves 63a to 63f, as by set screws 64 shown in Fig. 5. For each die position, an aperture 61 is provided into which the extending pin 59a of the rack setting knob 59 may be inserted. These are shown in Fig. 8.

The female die parts 62 shown in Figs. 7 and 8, starting with 62a and running to 62f, illustrate a range of connector sizes which may be used in the rack 60, with grooves 63g and 63h unoccupied. In Fig. 5, a cross-section of the rack 60 is shown along the center line of die 62c. The inner supporting circular section 62c is shown upon which the body 81 of the connector 80 rests. The connector tongue is supported upon a block mounted behind the die parts, and having a length and height sufficient to satisfactorily support the connector body depending on the size of connector and corresponding die part employed. Thus in Fig. 5, the supporting block 65c is mounted on the rack base 66 through bolts 67c. Similarly, 65a, 65b, 65d, 65e, 65f and 65g are positioned for support of the various connector sizes employed in die parts 62a, 62b, 62c, 62d, 62e and 62f respectively.

Plate 65g is designed for the large size connector bodies which may be allocated to die parts, not shown, which may be inserted into grooves 63g and 63h shown in Figs. 7 and 8. These supporting plates may be made into single plate structures, and milled to correct dimensions. Plates 65d, 65e and 65f are shown in this form. In all cases, the plates are securely bolted to the rack base 66, by means of bolts 67a and 67g respectively.

As has been described, the rack 60 is inserted into the milled out portions of the frame sections 43 and 44. The surfaces are indicated in the cross-section view of the press 40, illustrated in Fig. 5 as 44a, 44b, 43a and 43b. This forms an additional locking means for rigidly but slidably supporting the rack 60 in the frame.

In Fig. 5, the connector 80 is shown with the inserted conductor 82 in position on die part 62c, with the male die part 54 ready to be pressed into the connector body 81, making the indented connection 83 shown in Fig. 11.

In Fig. 9, a die rack 70 is shown which combines a corresponding male die part 71 properly aligned with each female die part 72, a suitable number of male die parts mounted in a frame member 73, which terminates in end members 74. These in turn are bolted to a rack 75 similar to the rack shown in Figs. 7 and 8 by bolts 76. The rear is splined as at 77 for engagement in the groove 78 of the press frame 79 shown in Fig. 10. The base 75a of the rack 75 similarly is inserted in the groove 79a of frame 79 formed by the two frame members 79b and 79c. Knob 79d engages aperture 79e and locks the rack 70 into the position selected for operation of the proper sized die parts. A cross-section through the rack 70 is similar to the cross-section of the piston and rack arrangement shown in Fig. 5.

5

One or more sets of corresponding die parts may be employed in the rack.

We have thus disclosed a detachable press for a portable compressing tool which may be readily bolted thereto, and which provides an arrangement of die parts for any press operation. In addition, a multi-unit die rack may be provided, where sizes and operation may be varied and which are available for ready use. The die rack may just provide for variations of one die part, or combined with corresponding die parts which may be selected and all selected parts instantly locked into the desired position. In the specification and claims, male and female die parts are defined as the movable and stationary die parts respectively.

While we have illustrated a die arrangement for indenting connectors to conductors, it will be readily understood that any desired operation may be performed, whether necessary for application to the work directly, as shown in Figs. 1 and 2, or when the work may be brought to the upright press, supported on a base, as shown in Figs. 3 and 4.

We have thus described our invention, but we desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of our invention, and, therefore, we claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of our invention are attained, and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

What we claim and desire to secure by Letters Patent, is as follows:

1. In combination, a tool having a body section provided with an attachment means at the lower portion thereof, a plunger projecting therebeyond and control means contained on said body section for manually controlling the operation of said plunger to be actuated; and a separable base unit having securing means for locking the base unit to the attachment means of the body section of the tool, said base unit having a movable die part and a stationary die part, said plunger being op-

6

erable to actuate the movable die part when the base unit is secured to the tool, and means for returning said movable die part to its initial position, said securing means for the base unit extending beyond the movable die part whereby when the tool and base unit are locked together, the plunger will be in operable position with respect to the base unit.

2. The combination of claim 1, wherein the attachment means of the tool and the securing means for the base unit are self positioning with respect to each other to permit constant alignment of plunger and the base unit when the tool and base unit are locked together.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
25 758,797	Thul	May 3, 1904
2,163,641	Wales	June 27, 1939
2,212,678	Whistler et al.	Aug. 27, 1940
2,085,105	Lex	June 29, 1937
2,316,946	Fischer	Apr. 20, 1943
30 2,283,503	Johnson	May 19, 1942
2,317,440	Cannon	Apr. 27, 1943
1,474,066	Brown	Nov. 13, 1923
2,278,932	Kellems	Apr. 7, 1942
2,158,855	Eby et al.	May 16, 1939
35 860,266	Summers	July 16, 1907
1,704,962	Bollaert	Mar. 12, 1929
2,278,184	Olson	Mar. 31, 1942
1,873,125	Holmes et al.	Aug. 23, 1932
1,986,025	Stecher	Jan. 1, 1935

FOREIGN PATENTS

Number	Country	Date
131,100	Great Britain	Aug. 21, 1919
462,341	Great Britain	Mar. 8, 1937
45 127,220	Great Britain	May 29, 1919
490,636	Great Britain	Aug. 18, 1938

OTHER REFERENCES

Die Design and Diemaking Practice, The Industrial Press, N. Y., 1930, pages 373, 374, 375.