

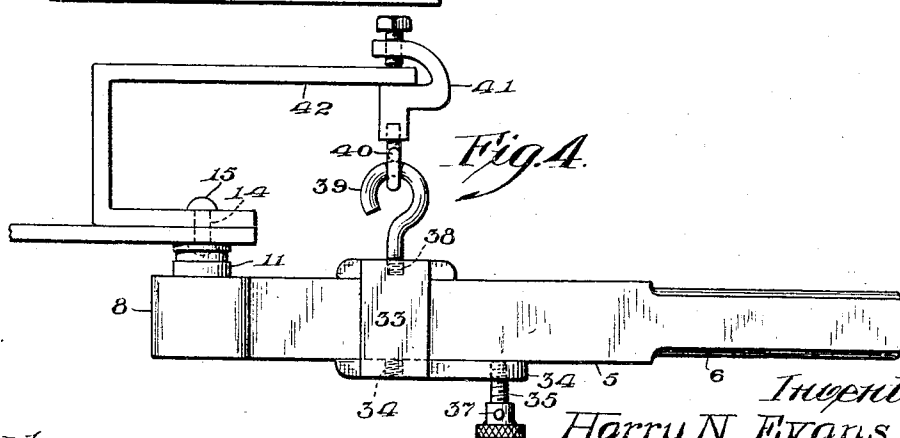
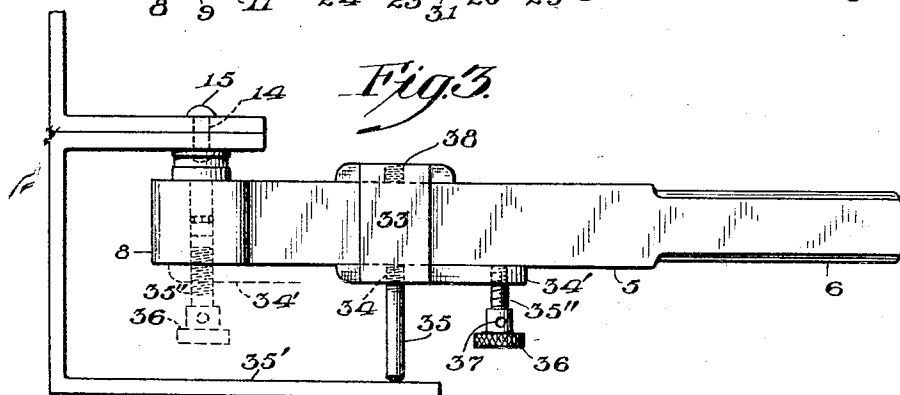
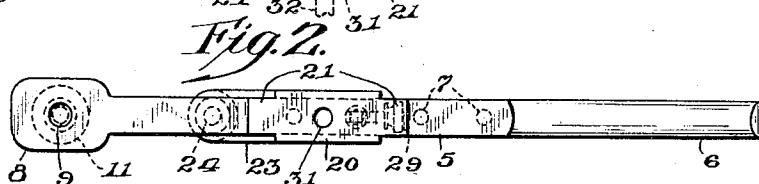
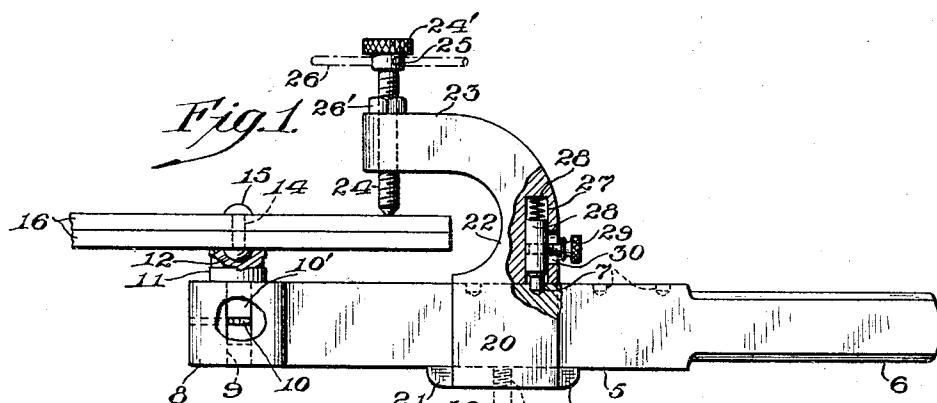
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1,803,965

ADJUSTABLE BUCKING-UP TOOL WITH INTERCHANGEABLE DIES

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UNITED STATES PATENT OFFICE

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ADJUSTABLE BUCKING-UP TOOL WITH INTERCHANGEABLE DIES

Application filed February 28, 1928. Serial No. 257,667.

The object of the invention is to provide improvements in the bucking-up tools or dollies, used by steel workers in the erection of skeleton work for office buildings, hotels, bridges, elevated railways, and the like, and particularly in the provision for interchangeability of the dies thereof as an inherent characteristic.

Heretofore, the bucking-up tool has comprised a weight of approximately thirty-five pounds which even the most experienced and strong man can hold effectively for only a half day or thereabouts. These weights, or dollies as they are generally known, are provided with recesses of given size for the reception and maintenance of the round shape of the rivet head, as the riveter operates with his usual pneumatic hammer upon the opposite or heated end of the rivet. Consequently, several such dollies must be carried and one substituted for another every time that a rivet of different size is to be set.

Furthermore, there are many occasions when a dolly of the usual form cannot be used to advantage if at all, and other special shapes must be substituted in accordance with the individual demands of the situation, such for instance as what is known as a heel dolly or a spring dolly. Therefore, an object of the invention is to provide a single tool for this purpose with only one or two extra parts of small size, and the same tool being adapted for use in practically any known position and under practically any known circumstances.

With these and other objects in mind, the present invention comprises further details of construction and operation which are fully brought out in the following description when read in conjunction with the accompanying drawings, in which Fig. 1 is a side elevation of one embodiment of the invention, though not as long proportionately as would probably be employed in the majority of cases to provide for a pressure of at least thirty-five pounds or so upon a rivet, upon the exertion of a downward pressure of an ordinary man's weight; Fig. 2 is a bottom plan view of the same; Fig. 3 is a side elevation of the same tool equipped with a heel instead of a clamp; and Fig. 4 is a similar

view of the tool equipped with a suspension support as hereinafter described.

Referring to Figs. 1 and 2, a shank 5 terminates at one end with a hand-engaging portion or handle 6, and upon its upper surface may be provided with spaced apertures 7.

The opposite end of said shank is transversely enlarged to provide a head 8, having a normally vertically extending bore 9 in which is frictionally secured, by means of a circular, radially outwardly expansible spring 10, the stem 10' of a die which also comprises a head 11, having a convex recess 12 of the proper size and curvature to conform to the head 13 of a rivet 14, the other end 15 of which is upon the opposite side of a plurality of members 16, which may be adjacent flanges of a pair of angle irons, I-beams, or the like, either or both of which extend laterally towards a free edge portion well removed from said rivet.

The die 11 represents one of a number of different sizes such as $\frac{3}{4}$ ", $\frac{7}{8}$ ", 1", $1\frac{1}{4}$ " and $1\frac{1}{2}$ ", which sizes are most commonly used in structural steel work. The shank of the die is provided with an annular groove 17 into which is radially contractible the circular wire spring 18, which tends to press outwardly against the surrounding surface of the bore 9, to yieldingly prevent the removal but permit the free rotation of said die, which may be removed for replacement by prying with a screw driver or similarly edged instrument beneath the head 11, after which a die of different size may be substituted therefor.

Slidably mounted upon and surrounding the shank 5 is a collar 20 of any desired shape and preferably provided with oppositely directed extensions 21 operative to increase the longitudinal cooperation of said collar with said shank to prevent tilting of the former upon the latter. From said collar rises an integral projection 22, terminating in a horizontally extending arm or gooseneck bracket 23, through which passes an adjustable screw 24 having a preferably pointed free end adapted to engage and bite into the surface of the upper of said members 16, while said screw terminates upwardly in a head

24' of any desired type, such as a knurled head for finger engagement, a polygonal head for wrench engagement, or otherwise as may be desired, but preferably provided with a diametrically extending bore 25, adapted to receive a pin 26 (shown in dot-and-dash lines), a nail, or other device, for aiding in manually tightening the screw. A lock nut 26' may also be added if desired.

The collar projection 22 is preferably provided with a recess 27, containing a compression spring which presses a pin 28 into any one of the apertures 7 of the tool shank 5 that may be desired, said pin being released to permit readjustment of said collar by manually raising a stud 29, which extends laterally from said pin through an elongated slot 30 in the wall of said recess. Said collar may also be provided, if desired, with a threaded recess 31 in its under side for the reception of an adjustable heel pin 32, shown in dot-and-dash lines, in which case instead of the collar being positioned as shown, it may be removed from the shank 5 and reversed so as to shift the arms 23 out of the way of a pneumatic hammer, or "gun", as it is frequently called, when the latter is in engagement with the rivet head 15 and it is necessary to position the heel 32 as far beneath the die as possible.

Referring to Fig. 3, the collar 20 is replaced by a collar 33, the under side of which is provided with a threaded aperture 34 into which is adapted to be screwed an adjustable pin 35 adapted to engage a suitable rest 35'. To adjustably secure the collar 33 in a given position upon the shank 5, the former is provided with an arm 34' paralleling and closely adjacent to said shank, and provided with a set screw 35'', frictionally engaging said shank and having any desired type of head 36, through which extends a bore 37 adapted to receive a pin or nail to aid in manually adjusting said screw. Or said collar may be reversed so that said screw is free to enter and engage the threaded lower end portion of the bore 9 in the shank head 8, as shown in dotted lines.

Finally, referring to Fig. 4, it will be apparent that the uppermost portion of the collar 33 may be provided with a threaded aperture 38 into which is removably secured an adjustable hooked member 39, the presence of which transforms the tool into a spring dolly. This result may also be obtained by removing and inverting the collar 33, so that the aperture 34 is uppermost, in which case it, instead of the aperture 38, receives the hooked member 39, which in either case is supported by the depending eye 40 of a seed clamp 41, the upper end of which latter is adjusted vertically with respect to the overhanging supporting member 42 by means of a set screw 43, carried by the former and directly engaging the latter.

In the operation of this tool in any of the forms described, downward pressure upon the handles 6 causes a multiplied upward pressure upon the dies 11, depending upon the position of the point of support or fulcrum, whether it be the pin 24 in Fig. 1, the heel 35 in Fig. 3, or the hook 39 and seed clamp 41 in Fig. 4. When a laterally extending portion of the members being riveted is available as in Fig. 1, the bracket 20—24 is employed; when no such extension is available but an underlying base or rest is present as represented in Fig. 3, the heel support is employed; and when neither lateral extension, nor underlying support is present, but overhanging support is available, the suspension shown in Fig. 4 is used. Thus, in Fig. 1 for example, the shank 5 comprises a mechanical lever composed of the usual power and work arms, namely, the manually engageable and die-supporting end portions 6 and 8, respectively, while the member 24 carried by the bracket 23 serves as a fulcrum with respect to and when in engagement with the member 16.

In all such arrangements a physical lever of the first class is provided and a very great amount of upward pressure can be exerted upon a rivet by a downward pressure upon the tool handle represented by only a small portion of a man's weight, the downward pressure upon the handles being related to the upward pressure upon the rivet, as the length of the weight arm from the fulcrum to the point of applied pressure is to the length of the power arm from the fulcrum to the point of contact with a rivet.

Having thus described my invention what I claim and desire to protect by Letters Patent of the United States is:

1. A bucking-up tool, comprising a shank, forming a lever and terminating in one direction in a manually engageable portion constituting a lever power arm, a rivet-engageable die supported by the opposite end portion of said shank which constitutes a lever work arm and angularly disposed with respect thereto, a bracket having a gooseneck extension adapted to partially surround and overhang a member being riveted to provide a fulcrum, and spring-pressed means to adjustably secure said bracket longitudinally upon and with respect to said shank, to vary the ratio between the power and work arms of the lever.

2. A bucking-up tool, comprising an elongated lever shank providing a manually engageable end portion constituting a power arm and its other end constituting a work arm and having a transverse bore, a rivet-engaging die extending into said bore, access to the rear of said die for the purpose of removal being through the opposite end of said bore, a bracket slidable longitudinally upon said shank towards and away from said die, spring-pressed means carried by said

5 bracket and engaging said shank to maintain
the same in relatively adjustable positions, a
goose-neck extension upon said bracket, and
an adjustable clamp carried by the free end
portion of said extension and adapted to en-
gage the rear side of an article to constitute
a fulcrum while against the front side of
which said die is adapted to bear.

10 In testimony whereof I have affixed my
signature.

HARRY N. EVANS, Sr.

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