

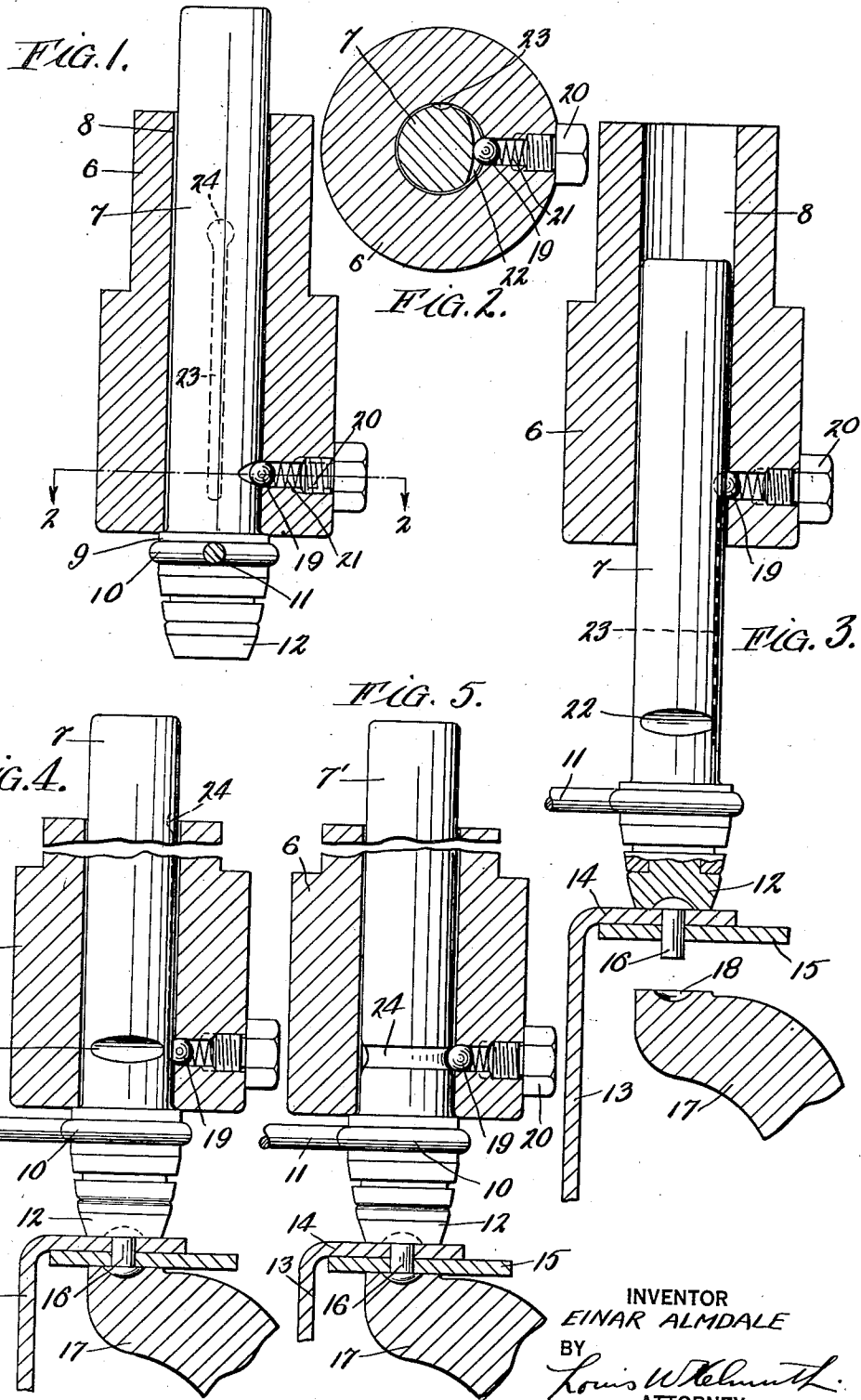
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ADJUSTABLE RAM NOSE FOR COLD RIVETING FIXTURES

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ADJUSTABLE RAM NOSE FOR COLD RIVETING FIXTURES

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This invention relates to cold riveting fixtures and an important object is to provide the same with an adjustable nose or rivet set which can be manipulated independently of the stroke of the ram for locating rivets, or can be regulated to return part of the way or fully with the ram to automatically provide a space or throat between the anvil and ram of a size which greatly facilitates the speed of locating and upsetting or heading rivets.

Another important object of the invention is to provide a device of the above character which can be easily manipulated to attain the above objects and which is simple and rugged in construction, durable and efficient in operation.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the accompanying drawing forming a part of the descriptive matter and wherein like numerals are employed to designate like parts throughout the several views:

Fig. 1 is a vertical section of the ram or impact member of a cold riveting fixture with the adjustable ram nose in its highest elevated position,

Fig. 2 is a transverse section of the same taken on the line 2-2 of Fig. 1,

Fig. 3 is a section similar to Fig. 1 illustrating the lowest position of the adjustable ram nose with respect to the impact member or ram of the press and its relation to an anvil horn with an article to be riveted located with respect to the rivet set carried by the adjustable nose,

Fig. 4 is a similar section showing the position of the parts during the heading of a rivet,

Fig. 5 is a similar section of a modified form of adjustable nose with the ram in its lowest position heading a rivet on the anvil.

In the handling and riveting of heavy and unwieldy objects such as automobile frames and especially when such objects necessitate the operator standing some distance from the riveting press, considerable skill and muscular effort is necessary in properly locating and holding the object with the rivet properly centered over the rivet set and anvil is required with the usual equipment. This invention proposes an adjustable nose and rivet set for the ram whereby the operator can accurately locate the rivets and work by the simple operation of lowering the ram nose independently of the power stroke of the ram without the usual muscular exertion of moving the heavy object to be riveted any great distance for location of the rivet. Moreover in

heading a multiplicity of rivets in the object which are located in rather close proximity at intervals as experienced in automobile frames, the invention facilitates the rapidity with which the rivets can be properly headed due to the arrangement cutting down the stroke or travel of the ram nose and rivet set. After the operator has headed a group of rivets in one portion of the frame and it is to be passed on to another operator to head another group of rivets, the adjustable ram nose is given a slight turn about its axis to set it in a position to be picked up and returned to its highest elevation by the normal operation of the ram. The raising of the ram nose to its highest elevation provides a wide throat between it and an anvil 17 to facilitate rapid insertion of the next object to approximate position. When the ram nose is in its intermediate position a narrower throat is provided between the ram nose and anvil whereby the operator can more quickly and accurately hold heavy work properly centered during the down stroke of the ram.

Referring now to the drawing for details, the numeral 6 designates the impact sleeve or member of the reciprocable ram of the usual cold riveting press or fixture. A ram nose has an elongated cylindrical shank 7 loosely mounted for reciprocation and rotation or oscillation within the enlarged bore 8 of the sleeve 6. The lower end of this nose is provided with an annular shoulder 9 against which abuts the impact member 6 of the ram for heading a rivet. Immediately below this shoulder, the nose is provided with an annular groove to snugly receive the ring end 10 of an elongated handle portion 11, by means of which the nose can be easily raised and lowered or turned about its axis. The lower end of this nose is provided with a rivet set 12.

The work or object to be riveted is shown in Figs. 3 to 5 inclusive; the object in the present illustration being in the form of an automobile side rail 13, to the flanges 14 of which are riveted cross members, brackets, motor supports and the like 15, by means of rivets 16. The rivet 16 before being headed is shown in Fig. 3 while Figs. 4 and 5 illustrate the other end of the rivet headed or upset by being pounded down into a cavity 18 of anvil 17 for securing the parts together.

For releasably retaining the adjustable nose in various positions with respect to the impact member 6, the latter is provided with a spring pressed detent in the form of a ball 19 freely mounted in a drilled opening adjacent the lower end of the

impact member. The outer end of this opening is tapped a slightly larger diameter for the reception of a screw 20. Interposed between the inner end of the shank of the screw and the ball is a compression spring 21 adapted to normally urge the ball into the bore 3 of the impact member or rather into engagement with the shank of the adjustable nose. This shank 7 of the nose is provided adjacent the shoulder 9 with a transversely extending gouged out groove 22 into which the spring pressed detent 19 is urged for holding the adjustable nose in its highest elevated position with respect to the impact member.

Approximately 90 degrees from the center of the groove 22, an elongated way or groove 23 is provided in the shank 7 to extend longitudinally thereof from a point slightly below groove 22 to a point a substantial distance thereabove where it terminates in an enlarged and deeper pocket or depression 24 into which the ball 19 seats to limit movement of the adjustable nose outwardly of the impact member and to lift the nose a slight distance from the anvil 17 upon the upstroke of the ram. In Fig. 2 it will be noted that the bottom of the transverse groove 22 is arcuated so that when the shank of the nose is turned to dispose the groove or way 23 in registration with the detent, the ball 19 will be cammed outwardly and into its opening until the way 23 registers with the detent at which time the latter will be urged by the compression spring 21 into this longitudinal groove.

Fig. 1 illustrates the normal inoperative position of the nose with respect to the impact member. When it is desired to head or set rivets with this device, the operator, by manipulating the handle 11 turns the shank 7 about 90° so as to cause the ball 19 to enter the longitudinal groove 23 and permit the nose to drop down until the ball enters the pocket or depression 24 to limit its downward movement. This disposes the rivet set 12 in close proximity to the anvil after the object to be riveted is interposed between the rivet set 12 and the anvil. A rivet 16 having been placed in registering openings of the articles to be riveted, the next operation is to raise the object so as to locate the head of the rivet in the rivet set 12. The press is next tripped to cause the ram to descend and move the impact member 6 downwardly until its lower end engages the shoulder 9 and forces the work and rivet down until the lower end of the rivet enters the depression 18 in the anvil and is upset or headed as shown in Fig. 4. In the event that there are other rivets to be headed in close proximity to the one just operated upon, the adjustable nose is not manipulated by the handle 11 so that upon the upstroke of the impact member, the ball 19 simply rolls along the longitudinal groove 23 until it enters pocket 24 and lifts the adjustable nose a slight distance from the anvil so that the position of the object can be changed and another rivet located in the set 12 for the next heading or upsetting operation. After all the rivets in this particular vicinity have been headed, the operator simply turns the adjustable nose so as to cause the groove to register with the detent when the impact member is in its lowermost position. Thereupon, when the impact member 6 is elevated by the ram, the ball 19 will catch in the groove 22 and raise the adjustable nose with it up to the elevation shown in Fig. 1 to provide an enlarged throat between the rivet set and anvil for the ready insertion of the next object to be riveted.

In Fig. 5 a slightly different modification of the invention is illustrated and parts of this modification which correspond to parts already described for the preceding modification will be given the same reference numerals with prime coefficients added thereto. The difference between these two modifications simply exists in the construction of the shank 7' and instead of being provided with two separate grooves, is simply provided adjacent its lower end with an annular groove 24 into a portion of which the ball 19 seats for retaining the adjustable nose in its highest elevation, to provide a relatively wide throat between the rivet set 12 and the anvil 17. This difference in construction provides for a slightly different mode of operation and perhaps a looser fit between the shank 7' and the bore of the impact member 6. Assuming that the ram and nose are in their highest elevated positions and the object to be riveted thereunder, the operator grasps the handle 11 and joggles the same to cause the detent ball 19 to slip out of the annular groove 24 whereupon the adjustable nose will descend by gravity to an appropriate distance above the anvil after which the object to be riveted can be located with the rivet to be set and the head of the rivet entered in the rivet set 12 whereupon the press can be tripped to cause the impact member to strike against the annular shoulder 9 of the adjustable nose and drive the rivet to a point of upsetting or heading the end which reposes in the recess in the anvil. The impact member 6 in lowering will cause the ball 19 to roll down the side of the shank 7' until it enters the groove 24 at which time the lower end of the impact member is disposed in abutment with the annular shoulder 9. Therefore, upon the upstroke of the impact member, it carries along with it the adjustable nose unless the operator wishes to retain the nose in a lower position, in which event he simply holds and manipulates the handle so as to joggle the detent out of the groove upon the upstroke of the impact member thereby retaining the rivet set 12 of the adjustable nose in a lowered position to facilitate locating and setting other rivets located in the same vicinity as the one which has been headed. In either modification, it may be desirable to set the object or work upon the anvil with the shank of the rivet extending upwardly to be engaged by the rivet set 12 on the downstroke of the impact member for upsetting or heading the shank end of the rivet.

It is to be understood that various changes in the size, form and arrangement of parts may be resorted to without departing from the scope of the appended claims.

I claim:

1. A riveting device including in combination a reciprocable ram member; of a relatively movable nose mounted in the ram member, said nose having a pair of vertically spaced shoulders, and an operator controlled detent mounted in said ram member and frictionally engageable with either of said shoulders at the will of the operator for releasably holding the nose at various positions of adjustment.

2. In a fixture, a reciprocable ram, a relatively movable nose mounted in the ram member, said nose having a pair of vertically spaced shoulders spaced circumferentially of the nose, a detent mounted in the ram member and engageable with either of said shoulders, and an operating handle connected with said nose for turning and moving

the nose lengthwise independently of the ram member.

5 3. In a riveting fixture, a reciprocable ram member, a relatively movable nose mounted in the ram member, said nose having a transverse groove adjacent its lower end, and a longitudinal groove circumferentially spaced from the transverse groove and terminating in a pocket, a detent in said ram member and engageable with
10 said transverse groove or pocket to releasably retain said nose at various elevations, the longitudinal groove serving to receive the detent during longitudinal movement of the nose relative to the ram member, and an operating handle connected to the nose for turning and moving it
15 lengthwise of the ram member.

4. A device of the class described comprising an impact member, a head having a shank slidably mounted in said member, said shank having a transversely extending groove, a spring pressed detent carried by the impact member and adapted to enter said groove when the impact member engages said head, said shank having a second groove extending lengthwise thereof and arranged with one end in substantially the same plane with that of the transverse groove and spaced laterally thereof, and the other end of said second groove terminating in a pocket spaced lengthwise of the shank from the transverse groove.

EINAR ALMDALE. 15