Jan. 4, 1938. J. H. FRIEDMAN 2,104,297

DOUBLE STROKE COLD HEADER

Filed Nov. 4, 1936 3 Sheets-Sheet 1

Fig. 1.

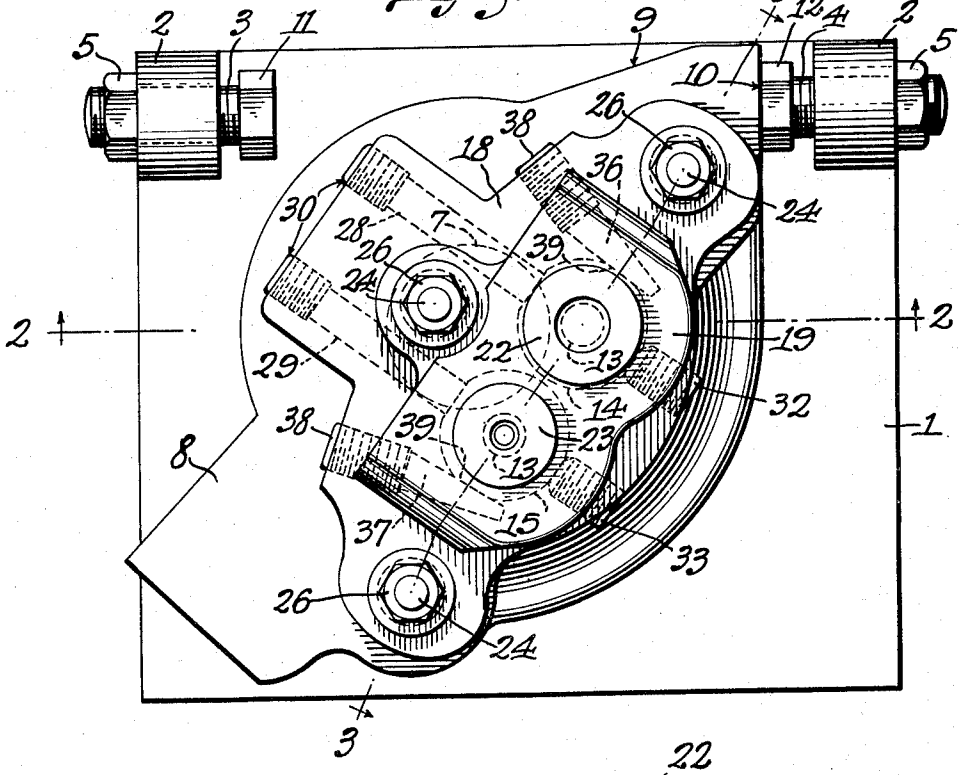
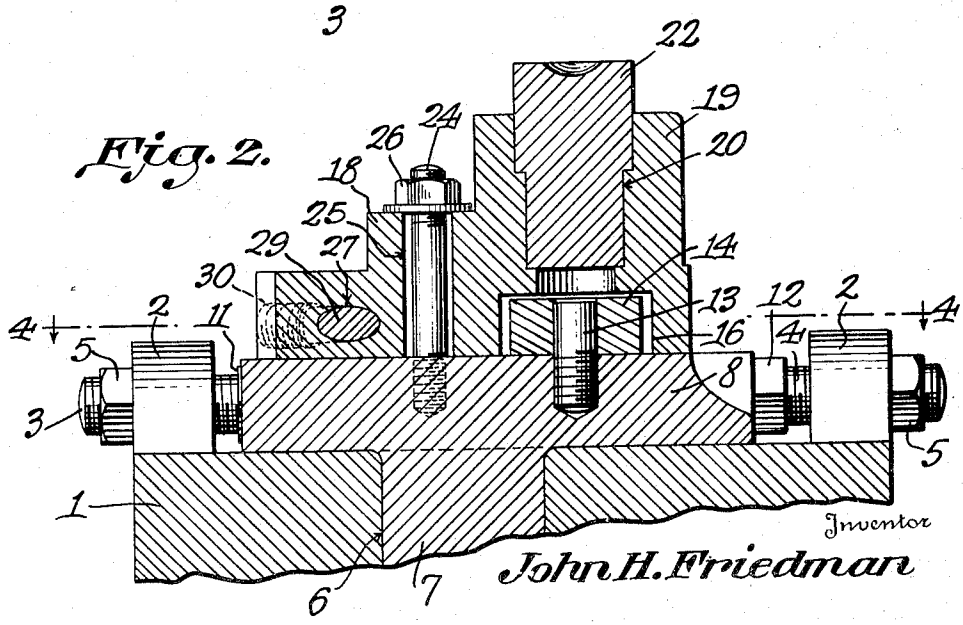


Fig. 2.



Inventor

John H. Friedman

By Crowell & Co.

Attorneys.

Jan. 4, 1938. J. H. FRIEDMAN 2,104,297

DOUBLE STROKE COLD HEADER

Filed Nov. 4, 1936 3 Sheets-Sheet 2

Fig. 3.

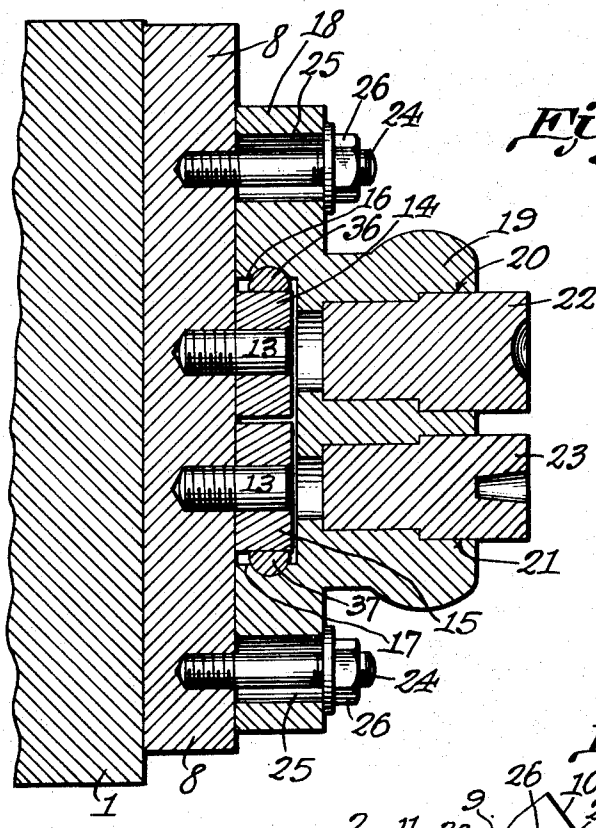


Fig. 8.

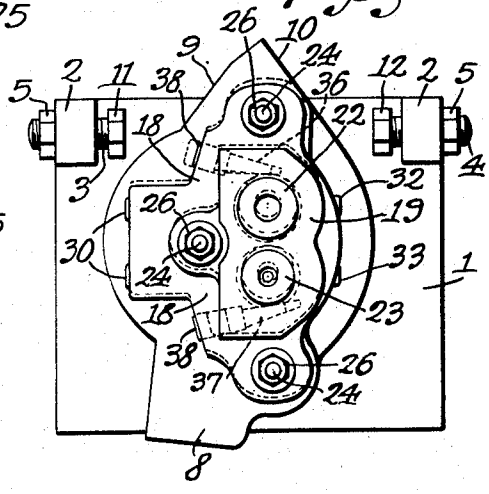
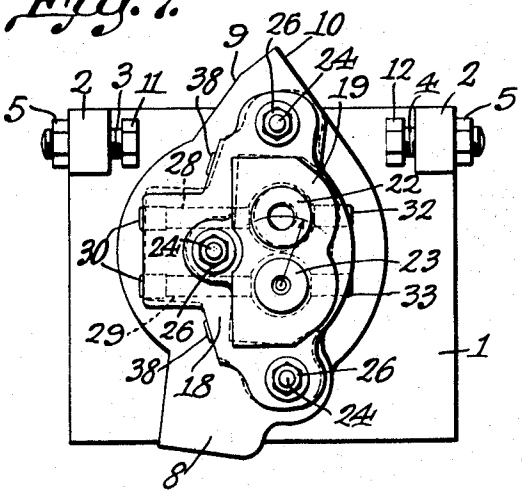


Fig. 7.



Inventor

John H. Friedman

By Cachow & Co.

Attorneys.

Jan. 4, 1938. J. H. FRIEDMAN 2,104,297

DOUBLE STROKE COLD HEADER

Filed Nov. 4, 1936 3 Sheets-Sheet 3

Fig. 4.

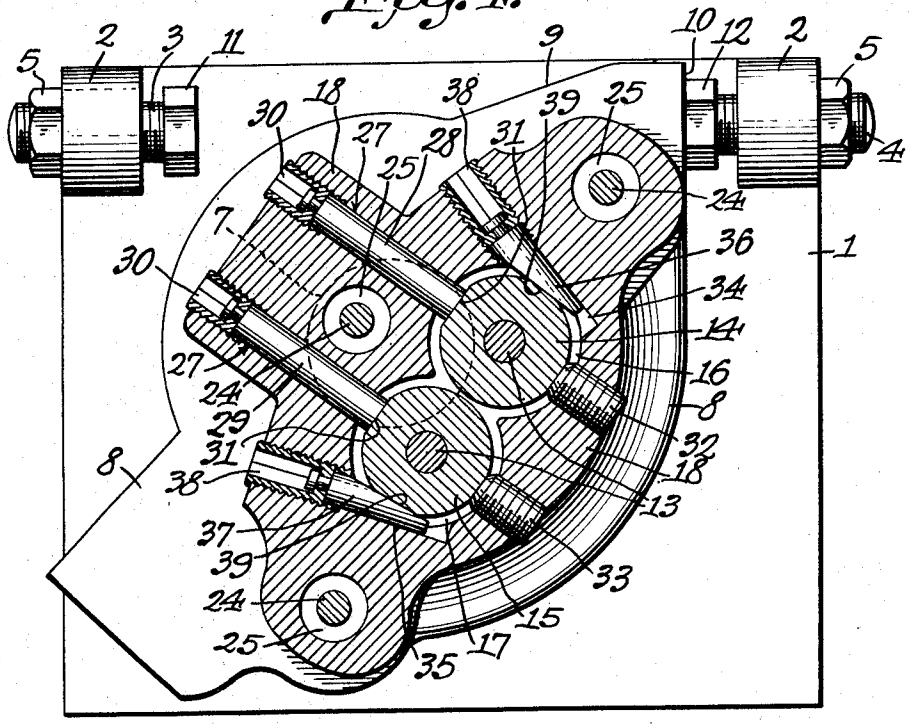


Fig. 5.

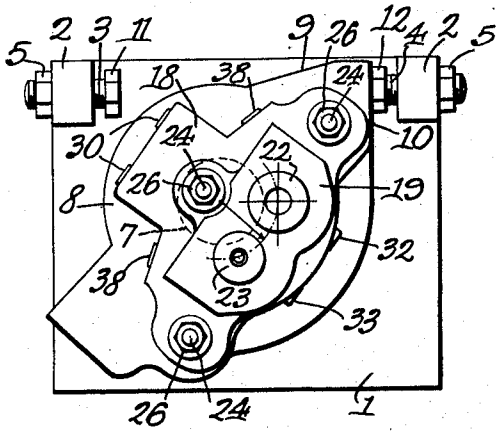
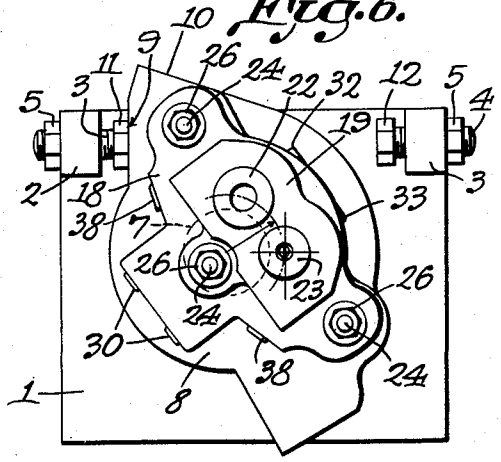


Fig. 6.



Inventor

John H. Friedman

By C. A. Snow & Co.

Attorneys.

Patented Jan. 4, 1938 2,104,297

UNITED STATES PATENT OFFICE

2,104,297

DOUBLE STROKE COLD HEADER

John H. Friedman, Tiffin, Ohio, assignor to The National Machinery Co., Tiffin, Ohio

Application November 4, 1936, Serial No. 109,196

13 Claims. (Cl. 10—26)

This invention relates to cold headers of the double stroke type wherein separate tools are carried by the slide and are shiftable automatically to be brought successively into blank engaging position. It is designed primarily as an improvement upon the structure disclosed in Patent 1,955,061, issued to me on April 17, 1934.

In the patented structure provision was made for minute adjustment of the tools for the purpose of centering them properly upon the work when brought to active or work-engaging position. It has been found in practice, however, that while the adjusting means disclosed in the patented device mentioned, are useful for the purpose of properly setting the respective tools, the operations required to effect the adjustment have been too involved and complicated to enable many operators to understand them. As a result one adjustment frequently has been thrown out while trying to obtain another adjustment.

An object of the present invention is to simplify the adjusting means to such an extent as to enable all operators to understand them and make them easily and quickly.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings

Figure 1 is a front elevation of the heading slide of a double stroke cold header provided with the improved form of tool carrier utilizing the new and novel adjusting means.

Figure 2 is a section on line 2—2, Figure 1.

Figure 3 is a section on line 3—3, Figure 1.

Figure 4 is a section on line 4—4, Figure 2.

Figure 5 is a front elevation on a reduced scale of the slide of a cold header showing the tool carrier at one limit of its movement.

Figure 6 is a similar view showing the tool carrier at the other limit of its movement.

Figure 7 is a similar view showing the tool carrier in an intermediate position and illustrating, by full and broken lines, two of the positions to which the tool holder can be adjusted relative to the head of the carrier, these adjustments being effected for the purpose of shifting the position of the cone tool or punch relative to the finishing tool or punch.

Figure 8 is a view similar to Figure 7 showing, by full and broken lines, other adjustments of the tool holder which can be effected for shifting both tools or punches upwardly or downwardly relative to the head of the carrier.

The heading slide 1, which is adapted to be operated by any suitable mechanism, is provided at its upper corner portions with ears 2 in which are mounted stop screws 3 and 4 respectively. A lock nut 5 is mounted on each screw and is adapted to cooperate with the adjacent ear 2 for the purpose of holding the screw against accidental rotation following its adjustment.

A bore 6 is extended into the face of the slide 1 and rotatably mounted therein is a shank 7 extending backwardly from the carrier 8. One end portion of this carrier projects between the screws 3 and 4 and has converging side faces 9 and 10 adapted to abut against the heads 11 and 12 of the respective screws 3 and 4. Thus while the carrier is capable of rocking back and forth about the axis of shank 7, such movement will be limited by the respective screws which can be adjusted toward or from each other for the purpose of insuring correct movement of the held tools or punches as hereinafter explained.

Extending from the carrier 8 at points equidistant from the axis of shank 7, are studs 13 on which are rotatably mounted abutment collars 14 and 15 respectively. These collars are seated within recesses 16 and 17 respectively provided in the back face of the tool holder 18 which, as illustrated, bears snugly against the front surface of carrier 8. This tool holder is formed with a boss or extension 19 having sockets 20 and 21 for receiving the heading tools or punches. In the structure illustrated a finishing punch or tool 22 has been shown seated in the socket 20 while a cone punch or tool 23 has been shown seated in the socket 21.

For the purpose of securing the tool holder 18 to carrier 8, threaded studs 24 are extended from the carrier 8 and through openings 25 formed in the tool holder adjacent to its end and center. The diameter of each of these openings is greater than the diameter of the studs located therein so that it is thus possible for the tool holder to be adjusted in any direction along the face of carrier 8 after which, by means of nuts 26 engaging studs 24, the tool holder can be clamped tightly against carrier 8. As the recesses 16 and 17 in the tool holder are of greater

diameter than the collars 14 and 15, these collars will not interfere with the sliding adjustment of the tool holder 18 on the carrier 8.

Formed within the tool holder 18 along parallel lines and opening into the respective recesses 16 and 17, are bores 27 in which are movably mounted thrust members 28 and 29 respectively. These can be in the form of pins to the outer end portions of which are swiveled screw plugs 30 engaging threads in the outer end portions of the respective bores. These plugs can be formed with sockets so as to be readily rotated by means of a suitable tool for the purpose of feeding pins 28 and 29 toward or from the respective recesses 16 and 17. The inner ends of these thrust members 28 and 29 are adapted to bear against the respective collars 14 and 15 and the peripheries of these collars are preferably flattened at the points designed to receive the thrust as indicated at 31. Alined with these thrust members 28 and 29 are adjusting screws 32 and 33 extending from one side of the tool holder 18 into the respective recesses 16 and 17 for the purpose of bearing against the collars 14 and 15.

The two recesses 16 and 17 are located between bores 34 and 35 which extend to one side of the tool holder. In these bores are slidably mounted adjusting wedges 36 and 37 respectively each of which is provided with a screw plug 38 swiveled thereon and engaging threads in the end portion of its bore. The plugs 38 are formed with sockets for the reception of suitable tools whereby they can be turned for the purpose of feeding the wedges toward or from the recesses 16 and 17 respectively. These wedges are adapted to tightly engage the peripheries of the respective collars 14 and 15 and, as shown particularly in Figure 4, those portions of the collars which are engaged by the wedges, can be flattened, as at 39. The collar engaging faces of the wedges are parallel.

By providing the various adjusting means thus far described a minute shifting of either or both of the tools relative to the axis of rotation can be effected readily. For example, should it be desired to lower the cone punch or tool 23 relative to the held work, it becomes necessary merely to loosen the nut 5 on the screw 3 and adjust the head 11 toward the opposed head 12. Consequently when the tool holder swings about the axis of the shank 7, the cone punch or tool will be brought to a stop in working position after its arcuate movement about said axis. To raise the cone punch the foregoing adjustment is reversed. By making corresponding adjustments of the screw head 12 the finishing punch or tool can be stopped at a higher or a lower point during its arcuate travel.

For the purpose of effecting a lateral adjustment of either tool, the nuts 26 are loosened. If the adjustment is to be effected toward the left in Figures 1 and 4 the screw 32 or 33 of the tool to be adjusted is loosened after which the corresponding thrust pin 28 or 29 is turned inwardly against its collar until the previously adjusted screw has been brought into clamping contact with the collar. An adjustment of the tool to the right is effected by reversing the foregoing action. When sufficient adjustment cannot be obtained by the manipulation of the screws 3 and 4, as heretofore explained, their total adjustment may be divided by moving the entire tool holder upwardly or downwardly through the manipulation of the wedges 36 and 37. It is to be understood of course that following every adjustment of the parts, the nuts 26 must be tightened to fasten the tool holder in the position to which it is has been adjusted.

When it is desired to remove the tool holder the upper wedge 36 is loosened after which nuts 26 are removed and the holder can then be withdrawn. The other wedge should not be loosened. After the holder has been replaced the loosened wedge is tightened. Thus the holder will be restored to the exact position previously occupied by it.

Importance is attached to the fact that by means of the adjusting devices which are now disclosed, either tool can be adjusted without loosing the adjustment of the other tool. These adjustments can be made quickly and accurately and are not confusing but, on the contrary, are quickly learned by any operator.

What is claimed is:

1. In a double stroke cold header a heading slide, a carrier mounted for oscillation thereon, adjustable means for limiting the oscillating movement of the carrier, a tool holder mounted on the carrier and including means for supporting a finishing tool and a cone tool, and cooperating means on the carrier and tool holder for shifting said holder bodily in any direction along that surface of the carrier engaged thereby.

2. In a double stroke cold header a heading slide, a carrier mounted for oscillation thereon, adjustable means for limiting the oscillating movement of the carrier, a tool holder slidably mounted on one face of the carrier, means for fastening said holder against movement on the carrier, and cooperating means on the carrier and tool holder for shifting the holder bodily in any direction on the engaged surface of the carrier.

3. In a double stroke cold header a heading slide, a carrier mounted for oscillation thereon, adjustable means for limiting the oscillating movement of the carrier, a tool holder mounted on one face of the carrier, separate tools movable with the holder, cooperating means on the carrier and holder for adjusting said holder angularly relative to either of the tools, and means carried by the tool holder and cooperating with the said adjusting means for adjusting the tool holder bodily in any direction along the surface of the carrier.

4. In a double stroke cold header a heading slide, a carrier mounted for oscillation thereon, adjustable means for limiting the oscillating movement of the carrier, a recessed tool holder bearing against one surface of the carrier, projecting elements on the carrier extending loosely into the recesses in the holder, separate tools movable with the holder, means in the holder and cooperating with said projecting means for sliding the holder on the carrier, and means for binding the holder to the carrier to prevent relative movement thereof.

5. In a double stroke cold header a heading slide, a carrier mounted for oscillation thereon, means for limiting the oscillating movement of the carrier, a tool holder bearing against one face of the carrier, separate tools movable with the holder, said holder having recesses back of the respective tools, projecting elements on the carrier and extending loosely into the respective recesses, and adjusting means cooperating with said projecting elements and carried by the holder for shifting said holder along the engaged surface of the carrier and relative to the axis of movement of the carrier.

6. In a double stroke cold header a heading slide, a carrier mounted for oscillation thereon, means for limiting the movement of the carrier, abutments projecting from the carrier, a tool holder fitted on the carrier and recessed to loosely receive the abutments, said holder including means for engaging and supporting a finishing tool and a cone tool, means on the holder and cooperating with the abutment element for adjusting the holder slidably along the carrier relative to the abutment and for adjusting the holder angularly about either of the abutments.

7. A double stroke cold header including a heading slide, a carrier mounted for movement thereon, abutments on the carrier, a tool holder fitted against the carrier and recessed for loosely receiving the abutments, said holder having means for engaging and supporting a finishing tool and a cone tool, and opposed means adjustably mounted for cooperation with the abutments to adjust the holder slidably or angularly on the carrier.

8. A double stroke cold header including a heading slide, a carrier movably mounted thereon, spaced abutments on the carrier, a tool holder recessed to loosely receive the abutments, said holder having means for engaging and supporting a finishing tool and a cone tool, opposed adjusting elements arranged in pairs and mounted in the holder, the adjusting elements of each pair being positioned to grip one of the abutments therebetween and being shiftable to slide the holder or adjust it angularly on the carrier and relative to the abutments.

9. A double stroke cold header including a heading slide, a carrier movably mounted thereon, spaced abutments on the carrier including rotatable portions, a tool holder recessed to loosely receive the abutments and positioned to bear against the carrier, said holder having means for engaging and supporting a finishing tool and a cone tool, and a pair of opposed adjusting elements in the tool holder and cooperating with each abutment to slide the holder on the carrier and/or adjust it angularly about either of the abutments, and means for securing the holder to the carrier when in any position to which it may be adjusted.

10. A double stroke cold header including a heading slide, a carrier thereon movably mounted, there being spaced abutments on the carrier, a tool holder recessed to receive the abutments and normally bearing against the carrier, the recess being proportioned to permit sliding movement of the holder relative to the carrier, a pair of opposed adjusting elements in the tool holder and engaging the abutments, said elements being operable to slide the holder on the carrier, and means for securing the holder to the carrier when in any position to which it may be adjusted.

11. A double stroke cold header including a heading slide, a carrier movably mounted thereon, abutments extending from the carrier, a tool holder having a recess for receiving the abutments, said holder bearing normally against the carrier, the recess in the holder being proportioned to permit sliding movement of the holder along the contacting face of the carrier, opposed wedges adjustably mounted in the holder for engagement with the abutments, and means for securing the holder to the carrier when in any position to which it may be adjusted.

12. A double stroke cold header including a heading slide, a carrier mounted for oscillation thereon, means for limiting the oscillating movement of the carrier, abutments extending from the carrier and including rotatable portions, a tool holder fitted against the carrier and recessed to receive the abutments, the recess in the holder being proportioned to permit sliding movement of the holder along the contacted surface of the carrier in any direction, adjustable means in the holder and cooperating with the rotatable portions of the abutments for shifting the holder bodily along the contacted surface of the carrier and/or adjusting it angularly on said surface and relative to either abutment, and means in the holder and cooperating with the abutments for sliding the holder along the carrier on lines intersecting the directions of adjustment effected by the first named adjusting means.

13. In a double stroke cold header a heading slide, a carrier mounted for oscillation thereon, adjustable means for limiting the oscillating movement of the carrier, spaced abutments on the carrier, a tool holder bearing against the carrier and recessed to receive the abutments, the recess in the holder being proportioned to permit limited sliding movement of the holder in any direction along the engaged surface of the carrier, opposed adjusting means in the holder and cooperating with the abutments for bodily shifting the holder in either of two directions on the contacted surface of the carrier and/or angularly relative to either abutment, and adjustable means in the holder and cooperating with the abutments for shifting the holder bodily along lines intersecting the directions of adjustment by the first named means.

JOHN H. FRIEDMAN.