Sept. 10, 1946. P. ANSTEDT 2,407,527

PUNCH PRESS SAFETY GUARD

Filed Aug. 26, 1944 2 Sheets-Sheet 1

Fig. 1.

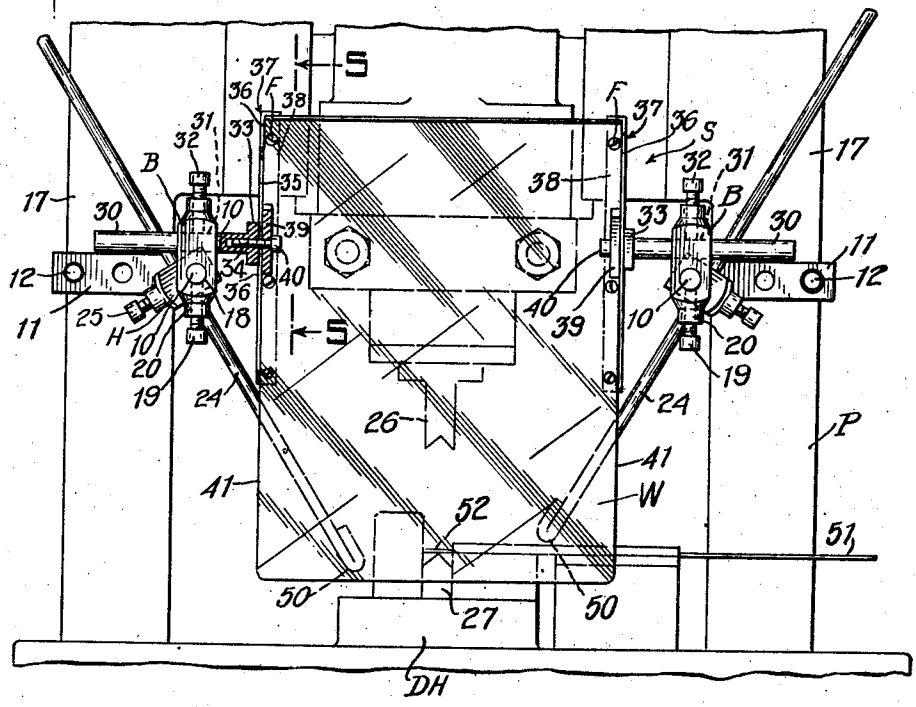
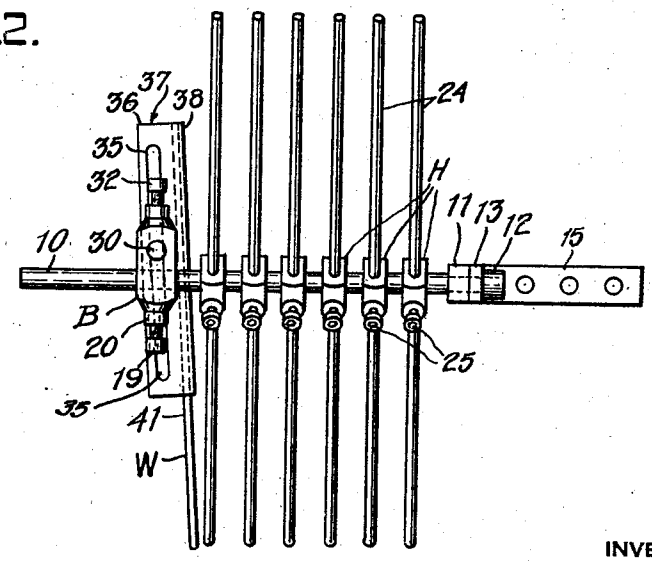


Fig. 2.



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Sept. 10, 1946. P. ANSTEDT 2,407,527

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Filed Aug. 26, 1944 2 Sheets-Sheet 2

Fig. 3.

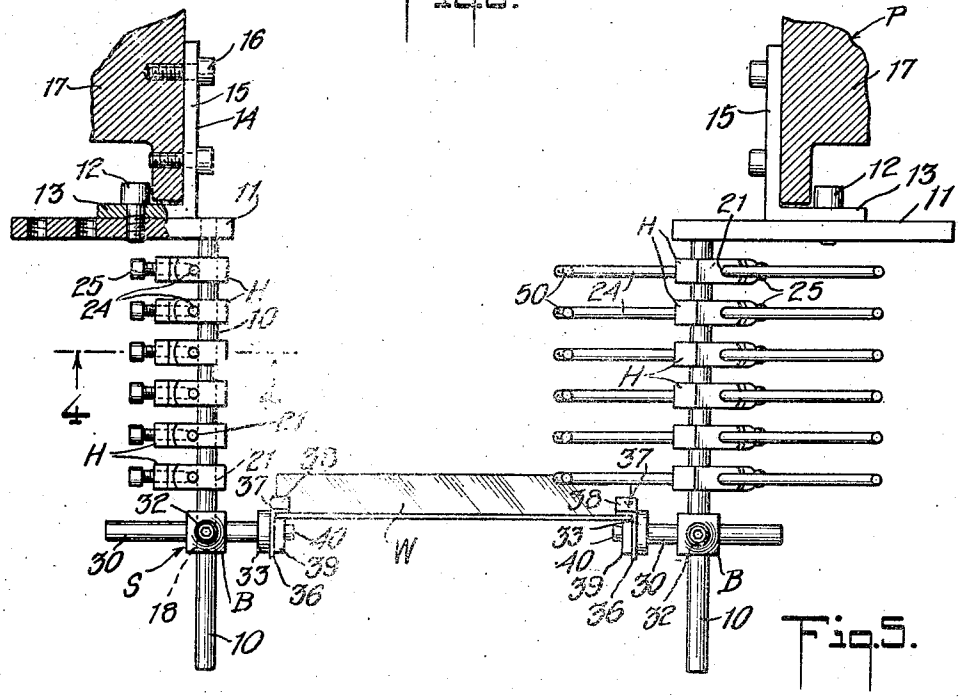


Fig. 5.

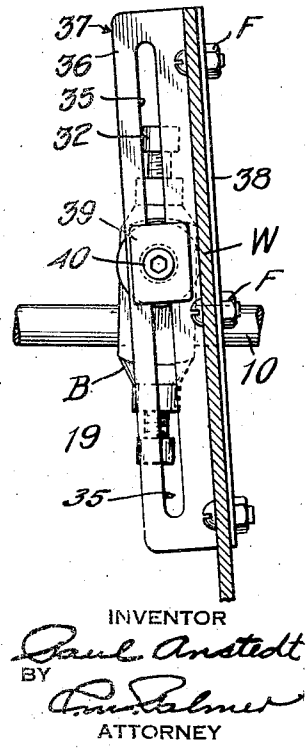


Fig. 6.

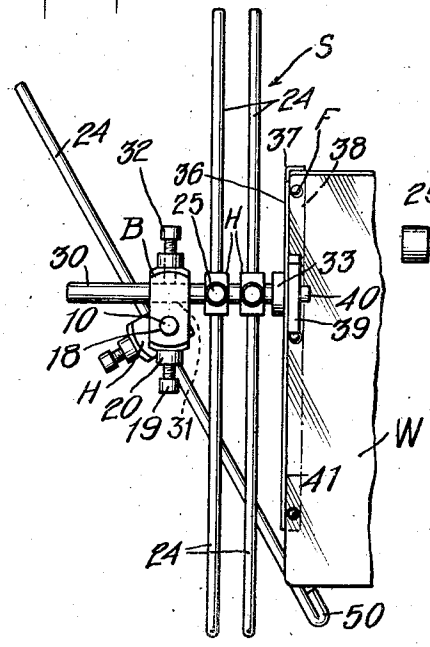
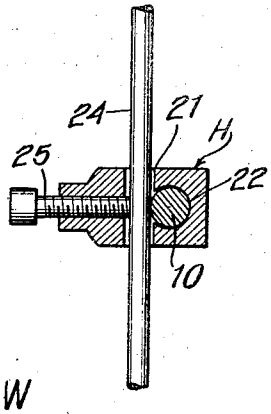


Fig. 4.



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PUNCH PRESS SAFETY GUARD

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Application August 26, 1944, Serial No. 551,365

24 Claims. (Cl. 74—612)

1

The present invention is concerned with a functionally and structurally improved safety guard adapted to be conveniently mounted on a punch press to desirably protect the operator. One object of the invention, inter alia, is to provide a serviceable and sturdy safety guard of the type referred to which is conveniently adapted for and readily adjustable to severally shield various types of dies under varying conditions during their normal course of operation. Another object of the invention is realized in the provision of a safety guard of the character referred to requiring a relatively short time for appropriate attachment to the press and about the working die. As a further aspect, the invention is concerned with a novel guard having means to protect both hands of the operator, namely, the hand facilitating the feed of the stock towards the die opening, and the hand facilitating the travel of the residual stock away from the die opening. The invention comprehends as a further advantage the provision of a full view safety guard which permits complete visual access to the die and the work fed therein, nevertheless providing positive and beneficial protection to the operator. Other important and salient objects, features and functional and structural advantages will appear from the following detailed description considered with the teachings of the accompanying drawings wherein:

Fig. 1 is a front elevational view of one embodiment according to my invention.

Fig. 2 is a side view of Fig. 1.

Fig. 3 is a plan view of Fig. 1.

Fig. 4 is a sectional view on the line 4—4 of Fig. 3, illustrating the clamping means for holding a protective prong in a selected position and its holder clamped thereby in a set and desired position.

Fig. 5 is a sectional elevational view on the line 5—5 of Fig. 1, and

Fig. 6 is a fragmentary front view of another embodiment according to my invention.

Illustrative of the embodiments disclosed, the safety guard generally denoted S comprises spaced bearing blocks or bearings B slidably and adjustably guided on the transversely arranged and spaced cylindrical rods 10 each securely fastened to a lug 11 desirably anchored by bolts 12 to corresponding arms 13 of the spaced brackets or angle irons 14 having their corresponding legs 15 removably fastened by bolts 16 to spaced and fixed standards or supporting portions 17 of the punch press broadly designated P.

2

Specifically each of the bearing blocks or bearings B includes a bore 18 closely surrounding rods 10 whereby these bearings B may be linearly or slidably guided on these rods. In this connection, it will be observed that each bearing block carries a threaded set screw 19 threadably connected thereto and extending therefrom and accessible at a nipple 20 thereof. By unclamping set screws 19 the bearings B may be slidably or linearly adjusted along these rods towards or away from the supporting portions of the punch press. Thereafter predetermined positions of adjustment may be held by again clamping set screws 19 against rods 10.

Slidably and rotatably mounted on each of the rods 10 are a plurality of spatially arranged prong holders H each of which comprises a circular bore or opening 21 normal to and in communication with a bore or opening 22 slidably receiving a supporting rod 10, the arrangement being such that the holders H are rotatably and linearly guided by the rods 10 while the protecting or guarding prongs or rods 24 are movably or slidably guided in their respective bores 21.

Associated with each prong holder H is suitable clamping means 25 in the form of a threaded set screw adapted to tighten or clamp a projecting prong against a companion supporting rod 10. By this arrangement the holders H may be readily unclamped and rotatably swung about its supporting rod or slidably adjusted therealong to any selected and predetermined position.

Where a prong holder H is in an unclamped relation with respect to its supporting rod 10, its respective projective prong 24 is also unclamped from this rod. Therefore this prong may be slidably displaced relative to its holder. It is thus apparent that the prongs of the holders may be conveniently adjustably projected or retracted towards or away from the die holder DH and set to an appropriate and desired angular relation therewith to preclude involuntary tampering with the punching and reciprocable member 26 and the fixed complementary anvil 27 of the die.

According to the invention, the bearing blocks B also rotatably and adjustably sustain the cylindrical stub shafts 30. More particularly these stub shafts are rotatably and slidably guided in the circular bores or openings 31 coextensive with the width of each block B. Adjustable clamping means characterized by a threaded set screw 32 threadably carried by each bearing block coop-

erate with a stub shaft 30 to hold the latter in a selected position relative to these blocks.

Each of the rotatable and slidably guided stub shafts 30 is provided with a collar or annular flange 33 from which extends the adjustable and threaded set screw 34 the shank of which projects into an elongated slot 35 of a forwardly extending leg 36 of a panel carrier generally denoted 37 having an inwardly turned ledge or flange 38 on which is secured by removable bolt and nut fastening means F the transparent window W.

The spaced brackets or panel carrier 37 thus in part characterize supporting means for the window W and these brackets are slidably and rotatably guided on the adjustable set screws 34. The legs 36 of window carrying brackets 37 are adapted to be removably clamped against collars 33 by the clamping plates 39 movably mounted on set screws 34 through the cooperative action of heads 40 of the set screws 34. If therefore these set screws are unloosened the window or panel W may be rectilinearly displaced relative to the stub shafts 30 and set to a selected position convenient to the operator of the punch press. However by unloosening bolts or set screws 32, the window supporting means defined by the adjustable brackets 37, set screws 34 and stub shafts 30 may also be rotatably or angularly and even slidably displaced relative to the work on the die. With the window supporting means set to a selected position, this position may be retained by tightening the adjustable bolts 32 against the stub shafts 30.

If desired protective prongs as 24 may be interposed between the sides 41 (Fig. 6) of the window W and the bearings B. In such event several prong holders H are rotatably and slidably mounted on the stub shafts 30 and the clamping means as 25 cooperate to removably clamp the prongs against the companion stub shafts 30 instead of as illustrated in connection with the form in Figs. 1–5, clamping against the holder supporting rods 10. In other aspects, the form according to Fig. 6 is identical to the construction disclosed in Figs. 1–5, however in each of the embodiments the lower portions of the prongs are bent over against themselves to provide curved and relatively smooth terminals 50 to prevent scratching of the tiltable window W, the work 51 fed into the die, or the operator.

In accordance with the invention the transparent panel or window W is arranged in front of the die and since the window is adjustable vertically it may be raised or lowered to suit the convenience of the operator, however, precluding direct access to the die or to that critical zone portion 52 of the work 51 in the die although providing full visual access in that this window is of a suitable transparent flexible and non-shatterable acrylic or Lucite. If desired the window may be suitably laminated and of other transparent plastic material as is well understood. Moreover since this window is carried by the stub shafts 30 which are slidably and rotatably sustained by the spaced bearings B, the window may be adjusted in a lateral direction as well as angularly in respect to the die. These adjustments may be quickly made to desirably shield the die and the work on the die. The window supporting means characterized by the brackets 37, the bracket supporting means or shafts 30 together with the spaced bearings B may thus be bodily adjusted laterally towards or away from the die. This is accomplished by merely unclamping set screws 32 and slidably shifting the bearings B along the guide rods 30. Subsequently screws 32 are again tightened against rods 30 to retain the desired position of selection.

The sides of the safety guard defined by the adjustable prong holders H and the prongs carried thereby also protect the operator. These prongs are generally arranged in an angular relation in respect to the die and the work thereon as shown, thus desirably shielding the die and the work on the die. By unclamping screws 16, the sides of the safety guard may be bodily tilted or swung relative to the die to a selected position and again clamped. Even though the sides of the safety guard have been adjusted and set, nevertheless it is apparent that the prongs thereof may be thereafter adjusted selectively and severally with respect to their holders H and thus relative to the die by simply unclamping set screws 25 to slidably adjust the prongs selectively relative to their holders or to slidably and rotatably adjust the holders relative to their sustaining rods 10. The safety guard may be quickly removed from the press upon detaching screws 16 from the supporting portions 17 thereof. Thereafter the guard may be readily and removably fastened to another press, the lugs or arms 11 having a plurality of threaded openings for severally receiving bolts 12 and consequently the safety guard may be promptly accommodated and attached to spaced supporting portions as 17 of another punch press which may have its supporting portions of a different spacing than that illustrated.

Since the safety guard may be adjusted as to width in the matter of increasing the distance between the opposing supporting rods 10 for the holders H, and since bearings B are adjustable towards and away from the body of the press, and since prong holders H with their protecting prongs may be angularly adjusted to compensate for various elevations of the dies, the guard is amply adjustable substantially in all directions about the work on the die to preclude involuntary projection of a finger or hand of the operator into the effective operating parts of the die, thus characterizing advantageous serviceable means to prevent needless accidents.

Briefly recapitulating it will be observed that the safety guard may be adjusted to increase or decrease its width by sliding the bearings B along the stub shafts 30. The depth of the guard may be also controlled by adjusting the bearings B along the guide rods 10. It is therefore apparent that the capacity of the guard may be desirably changed to take care of various sizes of dies apart from the fact that further compensatory protective adjustment is also possible in that the prongs as well as the window are selectively adjustable. And of course the window or panel may be set in an angular relation in front of the die to suit the convenience of the operator. This is accomplished by loosening the heads 40 of the set screws 34, thus disengaging clamping plates 39 from the legs 36 of the window carrying brackets 37 whereby the latter may be rectilinearly and/or angularly displaced on the set screws 34 which as previously stated project through the guide slots 35 of the brackets 37. Pursuant to the setting of the window W in a desired elevated and/or tilted position, such selected position is maintained by clamping plates 39 against the brackets 37.

Various changes may be made in the details of construction and arrangement of parts without departing from the spirit of the invention or

sacrificing any of the advantages thereof inherent therein.

I claim:

1. In a safety guard, spaced bearings, a window support having means slidably and rotatably sustained by said bearings, spaced rods slidably carrying said bearings, a plurality of holders slidably and rotatably mounted on said rods, and prong means adjustably carried by said holders.

2. In a safety guard, spaced bearings, a window support having means slidably sustained by said bearings, spaced rods substantially normal to said bearings and slidably carrying the latter, a plurality of holders slidably mounted on said rods, and prong means slidably carried by said holders.

3. In a safety guard, spaced bearings, a window support having means rotatably sustained by said bearings, spaced rods slidably carrying said bearings, a plurality of holders rotatably mounted on said rods, prong means slidably carried by said holders, and a transparent panel carried by said support.

4. In a safety guard, spaced bearings, a window support having means rotatably and slidably sustained by said bearings, spaced rods disposed transversely of and slidably carrying said bearings, a plurality of holders rotatably and slidably mounted on said rods, prong means slidably carried by said holders, and an adjustable transparent panel interposed between said bearings and sustained by said support.

5. In a safety guard, spaced bearings, a window support having spaced shafts adjustably sustained by said bearings, spaced rods slidably carrying said bearings, holder means rotatably mounted in a set position on said rods, clamping means to sustain said holder means on said rods, and prong means slidably sustained by said holder means.

6. In a safety guard, spaced bearings, shaft means rotatably and slidably guided by said bearings, brackets slidably and rotatably sustained on said shaft means, spaced rods slidably carrying said bearings, holder means slidably and rotatably mounted on said rods, prong means adjustably carried by said holder means, and a transparent window carried by said brackets.

7. In a safety guard, spaced bearings, shaft means rotatably and slidably guided by said bearings, brackets sustained by said shaft means, spaced rods substantially normal to said shaft means and slidably carrying said bearings, holder means slidably and rotatably mounted on said rods, prong means slidably carried by said holder means, and a transparent window sustained by said brackets.

8. In a safety guard, spaced bearings, shaft means rotatably and slidably guided by said bearings, means for clamping said shaft means to said bearings, brackets rotatably and slidably sustained on said shaft means, spaced rods slidably carrying said bearings, means for clamping said rods to said bearings, holder means slidably and rotatably mounted on said rods, prong means slidably carried by said holder means, clamping means for holding said prong means against said rods, and a transparent window carried by said brackets.

9. In a safety guard, spaced bearings, shaft means rotatably and slidably guided by said bearings, clamping means to prevent rotatable or slidable displacement of said shaft means relative to said bearings, spaced rods slidably carrying said bearings, holder means slidably and rotatably mounted on said rods, prong means adjustably carried by said holder means, means for clamping said prong means against said rods and the latter against said holder means, spaced brackets, means carried by said shaft means for rotatably and slidably sustaining said brackets, and a transparent window sustained by said brackets.

10. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings spaced from said bores and substantially normal thereto, spaced shafts projecting through and slidably and rotatably guided by the walls of said openings, clamping means to preclude displacement of said bearings relative to said rods, clamping means to prevent displacement of said shafts relative to said bearings, prong means, holder means mounted on said rods and having means rotatably guided thereon and having means for slidably guiding said prong means, clamping means to preclude displacement of said prong means relative to said holder means, clamping means to prevent displacement of said holder means relative to said rods, supporting means, means carried by said shaft means for sustaining said supporting means, and a transparent window carried by said supporting means.

11. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings spaced from said bores and substantially normal thereto, spaced shafts slidably and rotatably guided by the walls of said openings, clamping means mounted on said bearings to preclude displacement of said bearings relative to said rods, clamping means mounted on said bearings to prevent displacement of said shafts relative to said bearings, relatively elongated prong means, holder means mounted on said rods and having means rotatably and slidably guided thereon and having means for slidably guiding said prong means, clamping means on said holder means to preclude displacement of said prong means relative to said holder means, clamping means to prevent displacement of said holder means relative to said rods, spaced brackets, means carried by said shaft means for rotatably sustaining said brackets, and a transparent window carried by said brackets.

12. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings spaced from said bores and substantially normal thereto, spaced shafts slidably and rotatably guided by the walls of said openings, clamping means to preclude displacement of said bearings relative to said rods, clamping means to prevent displacement of said shafts relative to said bearings, a plurality of prong means, a plurality of holder means mounted on said rods and having means rotatably and slidably guided thereon and having means for slidably guiding said plurality of prong means, clamping means to preclude displacement of said prong means relative to said holder means, clamping means to prevent displacement of said holder means relative to said rods, spaced brackets, means carried by said shaft means for slidably sustaining said brackets, and a transparent window carried by said brackets.

13. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings

spaced from said bores and substantially normal thereto, spaced shafts slidably and rotatably guided by the walls of said openings, clamping means to preclude displacement of said bearings relative to said rods, clamping means to prevent displacement of said shafts relative to said bearings, prong means, holder means mounted on said rods and having means rotatably guided thereon and having means for slidably guiding said prong means, clamping means mounted on said holder means cooperating with said prong means to clamp the latter against said rods to prevent displacement of said prong means relative to said holder means and to preclude displacement of said holder means relative to said rods, spaced brackets, means carried by said shaft means for sustaining said brackets, and a transparent window carried by said brackets.

14. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings spaced from said bores and substantially normal thereto, spaced shafts slidably and rotatably guided by the walls of said openings, adjustable clamping means mounted on said bearings to preclude displacement of said bearings relative to said rods, adjustable clamping means mounted on said bearings to prevent displacement of said shafts relative to said bearings, prong means, holder means mounted on said rods and having means rotatably guided thereon and having means for slidably guiding said prong means, adjustable clamping means mounted on said holder means to preclude displacement of said prong means relative to said holder means and to prevent displacement of said holder means relative to said rods, spaced brackets, means carried by said shaft means for rotatably and slidably sustaining said brackets, and a transparent window carried by said brackets.

15. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings spaced from said bores and substantially normal thereto, spaced shafts slidably and rotatably guided in said openings, clamping means to preclude displacement of said bearings relative to said rods, clamping means to prevent displacement of said shafts relative to said bearings, prong means, holder means mounted on said rods and having means rotatably guided thereon and having means for slidably guiding said prong means, clamping means to preclude displacement of said prong means relative to said holder means, clamping means to prevent displacement of said holder means relative to said rods, spaced brackets, means carried by said shaft means for movably sustaining said brackets, a transparent window carried by said brackets, prong means, holder means mounted on said shaft means and interposed between said bearings and brackets and having means for slidably guiding said last mentioned prong means, and means to preclude displacement of the latter relative to said last mentioned holder means.

16. In a safety guard, spaced rods, spaced bearings having bores for slidably receiving said rods, said bearings having openings substantially normal to said bores and spaced therefrom, shaft means slidably disposed in said openings and substantially normal to said rods, prong holders rotatably carried by said shaft means, and means to preclude displacement of said prong holders relative to said shaft means.

17. In a safety guard, spaced rods, spaced bearings having bores for slidably receiving said rods, said bearings having openings substantially normal to said bores and spaced therefrom, shaft means slidably disposed in said openings and substantially normal to said rods, prong holders rotatably and slidably carried by said rods and shaft means, means to preclude displacement of said prong holders relative to said rods and shaft means, and means to preclude displacement of said bearings relative to said rods and shaft means.

18. In a safety guard, spaced rods, spaced bearings having bores for slidably receiving said rods, said bearings having openings substantially normal to said bores and spaced therefrom, prong means, shaft means slidably disposed in said openings and substantially normal to said rods, holder means slidably and rotatably carried by said rods and having means for slidably guiding said prong means, means to preclude displacement of said prong means relative to said rods, clamping means to preclude displacement of said rods relative to said bearings, and clamping means to preclude displacement of said shaft means relative to said bearings.

19. In a safety guard, spaced rods, spaced bearings having bores for slidably receiving said rods, said bearings having openings substantially normal to said bores and spaced therefrom, prong means, shaft means slidably disposed in said openings and substantially normal to said rods, holder means rotatably carried by said rods and movably guiding said prong means, and means to preclude displacement of said holder means relative to said rods and said prong means relative to said holder means.

20. In a safety guard, holder means having a bore, rod means disposed within said bore for slidably guiding said holder means, said holder means having an opening substantially normal to said bore and in communication therewith, prong means movably guided by said opening, and means carried by said holder means for clamping said prong means against said rod and the latter against the wall of said bore.

21. In a safety guard, holder means having a bore, rod means disposed within said bore for slidably and rotatably guiding said holder means, said holder means having an opening substantially normal to said bore and in communication therewith, prong means movably guided by said opening, and adjustable means extending from said holder means and threadably engaging therewith for clamping said prong means against said rod and the latter against the wall of said bore.

22. In a safety guard, holder means having a bore, a cylindrical support projecting into said bore for slidably and rotatably sustaining said holder means, said holder means having an opening substantially normal to said bore and in communication therewith, prong means slidably guided by said opening, said holder means having a threaded opening substantially normal to said first mentioned opening, and adjustable threaded means mounted in part within said threaded opening and in part projecting from said holder means for disengageably clamping said prong means against said rod and the latter against the wall of said bore.

23. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and

for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings spaced from said bores and substantially normal thereto, spaced shafts slidably and rotatably guided by the walls of said openings, clamping means mounted on said bearings and cooperating with said rods to preclude displacement of said bearings relative to said rods, and clamping means mounted on said bearings and cooperating with said shafts to prevent displacement of said shafts relative to said bearings.

24. In a safety guard, spaced rods, spaced bearings having bores for receiving said rods and

for slidably guiding said bearings on and longitudinally of said rods, said bearings having openings spaced from said bores and substantially normal thereto, spaced shafts slidably guided by the walls of said openings, threaded means mounted on said bearings for clamping said rods against said bearings to preclude displacement of said bearings relative to said rods, and threaded means mounted on said bearings for clamping said shafts against said bearings to prevent displacement of said shafts relative to said bearings.

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