

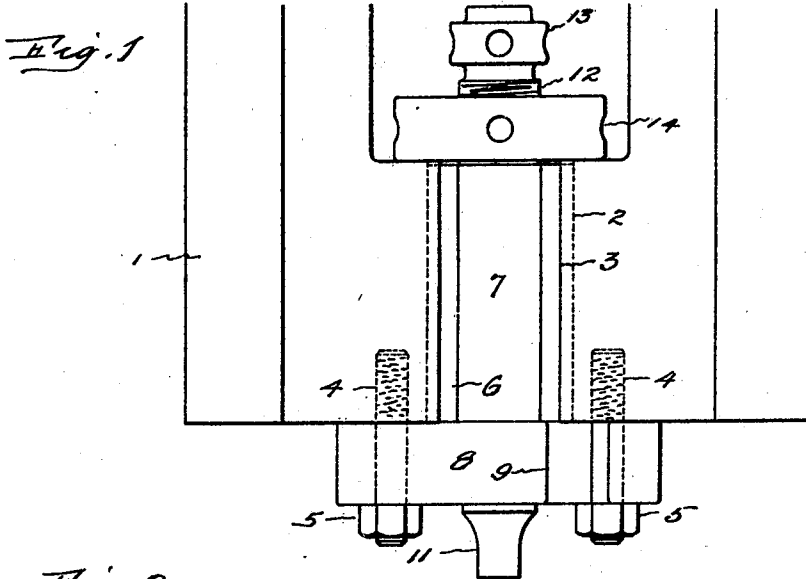
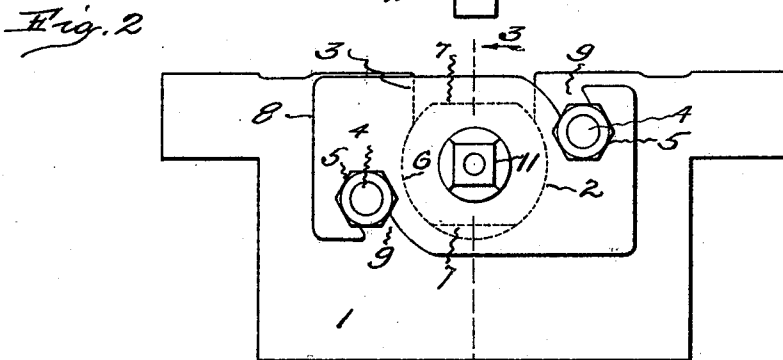
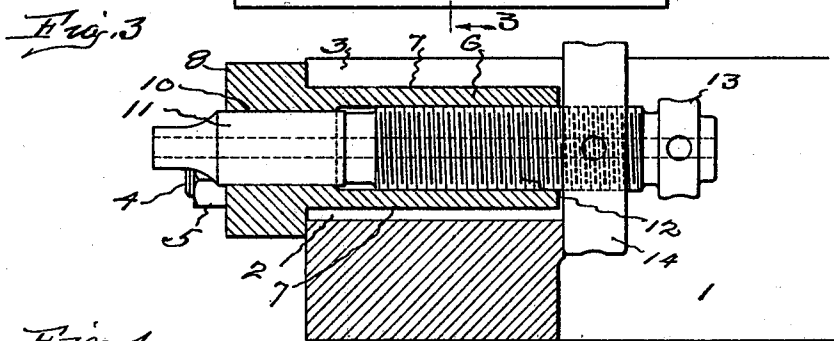
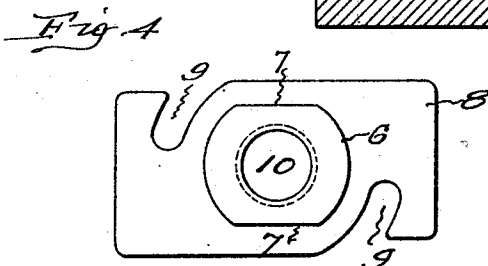
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PUNCH HOLDER FOR TRIMMING MACHINES

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PUNCH HOLDER FOR TRIMMING MACHINES.

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In automatic machines designed for heading, punching, trimming and performing similar operations on metallic blanks, of the general character illustrated and described in patent to Campbell No. 926,170, June 29, 1909, there are gates which are reciprocated by cranks or eccentrics and which carry swaging, perforating or shearing punches.

The object of the present invention is to provide a construction whereby the punch and punch holding means of such machines may be as a unit quickly applied to or removed from the reciprocating gates, and thereby reduce the expense of manufacture and facilitate assembly and change when it is desired to use a different punch.

In attaining this object the body of the punch holder is made cylindrical with two opposite sides flattened. The reciprocating gate has a cylindrical bore of a diameter that will receive the cylindrical body of the punch holder and has a slot cut through its top to the bore, which slot is of a width equal to the minimum diameter of the body of the punch holder, whereby the punch holder may be passed edgewise through the slot into the bore and given a quarter turn to a position in which it will be retained in the bore. The forward end of the punch holder has a head with slots that when the punch holder is in operative position in the gate fit clamping studs, bolts or screws which when tightened lock the punch holder from turning. The studs and head of the punch holder tie together the sections of the gate which are separated by the bore and slot so that they will not spring apart under the force of the blows of the punch when it strikes.

In the accompanying drawings Fig. 1 is a plan of the forward end of the reciprocating gate of a trimming machine with the punch holder and punch arranged according to this invention. Fig. 2 is a front elevation of the same. Fig. 3 is a vertical section on the plane indicated by the dotted line 3—3 on Fig. 2. Fig. 4 is a rear view of the punch holder.

The gate 1 has the usual well known outline of those found in machines of the type referred to. The front end of the gate has a longitudinal bore 2 that is circular in cross section and has a slot 3 cut through the top of the gate to the bore, which slot is less in width than the diameter of the bore. Screwed

into the front end of the gate are studs 4 provided with nuts 5.

The body 6 of the punch holder is generally circular in cross section and of a diameter that will closely fit the bore in the gate. On two opposite sides the body of the punch holder is flattened, as at 7, to reduce its diameter from flat to flat to a dimension which will permit the holder to be passed through the slot into the bore in the gate. At the forward end of the punch holder is a head 8 which extends transversely and is provided with slots 9 that when the punch holder is rotated will turn on to or from the studs set in the end of the gate.

The punch holder has a longitudinal bore 10 that at the front end is smooth for receiving a punch 11 and at the rear end is threaded for receiving the plug 12 that is screwed against the inner end of the punch. This plug has a head 13 by means of which it may be conveniently turned, and a nut 14 that when turned up against the gate causes the gate to be clamped between the head of the holder and the nut. When the nut 14 is loosened the plug may be used to force the punch from the bore of the holder.

In assembling this structure the holder is turned edgewise and passed through the slot into the bore and given a quarter turn, after which the nut 14 at the rear and the nuts 5 at the front are tightened. In this condition the holder is solidly secured in the gate. When the nut 14 and the nuts 5 are loosened the punch holder may be given a quarter turn and then removed from the gate. It is a very simple matter to loosen the nuts and remove the punch holder, and when the punch holder is in position and the nuts are tightened the head of the holder fitting the stud ties together the divided section of the gate so that it will not yield when a blow is struck by the punch.

The invention claimed is:

1. A punch holding means for metal trimming machine comprising a gate having a longitudinal bore of one diameter and an opening thereto of less width than the diameter of the bore, a punch holder having a body with a maximum diameter that fits said bore and a minimum diameter less than the width of said opening whereby the body of the holder may be passed through the said opening into and out of the bore, and when

in the bore may be turned to prevent its withdrawal or to permit its removal.

2. A punch holding means for metal trimming machine comprising a gate having a longitudinal bore of one diameter and an opening thereto of less width than the diameter of the bore, a punch holder having a body with a maximum diameter that fits said bore and a minimum diameter less than the width of said opening whereby the body of the holder may be passed through the said opening into and out of the bore, and when in the bore may be turned to prevent its withdrawal or to permit its removal, said holder having a head of greater width than the diameter of the bore, and means for fastening the head to the gate and locking the holder from turning in the bore.

3. A punch holding means for metal trimming machine comprising a gate having a cylindrical bore of one diameter and an opening thereto of less width than the diameter of the bore, a punch holder having a cylindrical body that fits said bore and flattened sides, whereby the body of the holder may be passed transversely through the said opening into and out of the bore and when in the bore turned to prevent its withdrawal or to permit its removal, and means for fastening the punch holder to the gate to prevent the punch holder from turning in the bore.

4. A punch holding means for metal trimming machine comprising a gate having a longitudinal bore of one diameter and an opening thereto of less width than the diameter of the bore, studs extending from the front end of said gate, a punch holder having a body with a maximum diameter that fits said bore and a minimum diameter less than the width of said opening whereby the body of the holder may be passed through the said opening into and out of the bore, said holder having a head with slots that receive said studs for fastening the head to the gate and locking the holder from turning in the bore.

5. A punch holding means for metal trimming machine comprising a gate having a longitudinal bore of one diameter and an opening thereto of less width than the diameter of the bore, a punch holder having a body with a maximum diameter that fits said bore and a minimum diameter less than the width of said opening whereby the body of the holder may be passed through the said opening into and out of the bore, and when in the bore may be turned to prevent its withdrawal or to permit its removal, said holder having an opening at its front end for receiving a punch, and a plug threaded into its rear end.

6. A punch holding means for metal trimming machine comprising a gate having a longitudinal bore of one diameter and an opening thereto of less width than the diameter of the bore, a punch holder having a body with a maximum diameter that fits said bore and a minimum diameter less than the width of said opening whereby the body of the holder may be passed through the said opening into and out of the bore, and when in the bore may be turned to prevent its withdrawal or to permit its removal, said holder having a head at its front end and a plug threaded into its rear end with a nut on said plug and adapted to in connection with the head fasten the holder in the gate.

7. The combination of a reciprocatory gate having a longitudinal opening of two different widths and a punch holder having a head and a body of two different widths, the maximum width of the holder body fitting the maximum diameter of the opening in the gate and the minimum width of the holder body capable of passing through the lesser opening in the gate, whereby the holder in one position may be passed into and out of the gate, and when in the gate may be turned to prevent its withdrawal therefrom, and means for locking the holder from turning in the gate.

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