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ROD TRIMMING DEVICE

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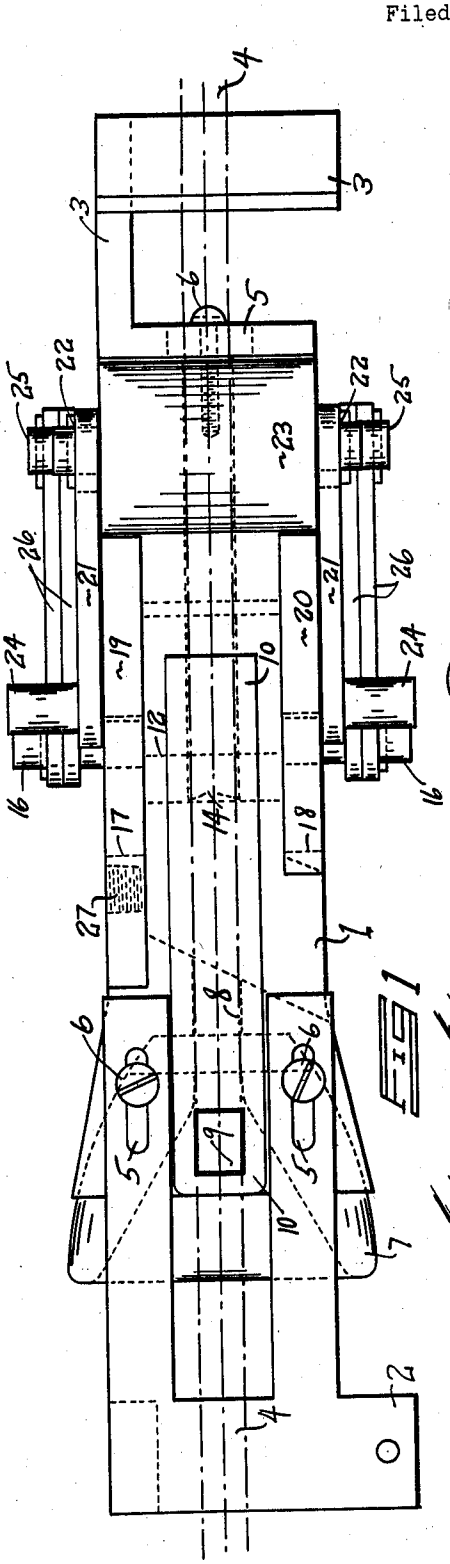


Fig. 1

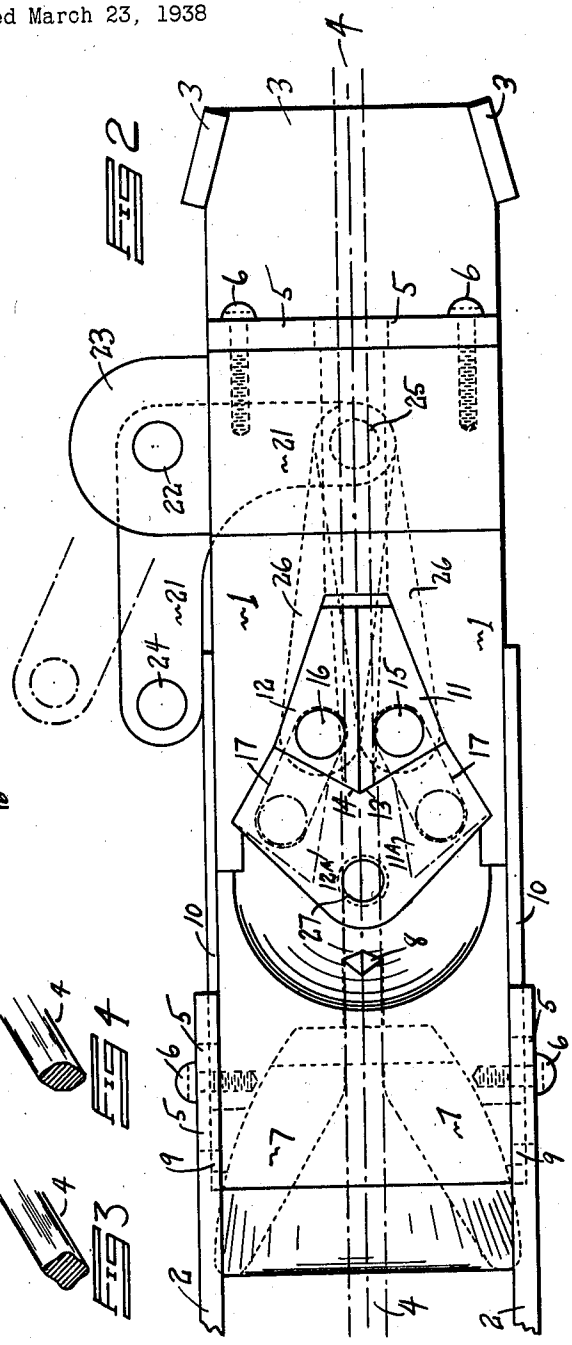


Fig. 2

Fig. 4

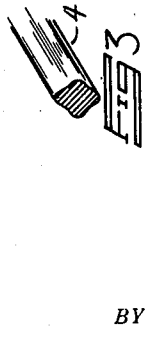


Fig. 3

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ROD TRIMMING DEVICE

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6 Claims. (Cl. 80—3)

This invention relates to a rod trimming device.

The principal object of this invention is the provision of a rod trimming device so formed that when placed between a pair of the finishing stands of a rod rolling mill, the device will suitably trim the "fin" or "overfill" from the rod being rolled.

A further object of this invention is the provision of a rod trimming device so formed that the cutting dies of the device may be moved to an open position at the will of the operator in order that the leading end of a rod entering the device may pass the cutting edges of the dies before they are moved into trimming position.

A further object of this invention is the provision of a rod trimming device formed in a compact unit, readily movable from one location to another, as desirable when different stands of finishing rolls are used for forming different sizes of rods.

A still further object of this invention is the provision of a rod trimming device so formed that the cutting or trimming dies are readily replaceable, as is the guiding "trumpet" or bell like opening adapted to guide the rod into the device.

A still further object of this invention is the provision of a rod trimming device designed to be positioned between a pair of the finishing stands of a rolling mill by placing it upon and between the delivery guides of one set of rolls and the receiving guide of the next set of rolls.

In rolling a billet into a rod suitable for use in a wire drawing machine, or for any other use, it is highly important that the rod formed be of the correct shape and size, and a true round when finished.

In rolling a billet into a rod it is customary to reduce the billet by alternate "ovals" and "squares" in the roughing and finishing stands of the continuous rolling mill, that is to say, the various stands of rolls shape the billet first "oval" then "square" while reducing it to the desired size.

When the rod has passed through six stands of roughing rolls it is sheared to form a clean cut leading end, and then passed into the finishing stands of rolls. The finishing rolls are ten in number and continue to reduce the rod by alternate "ovals" and "squares" until the last two stands of rolls are reached, these are known as the "finishing oval" and "finishing round". When the rod is passed through them it is completely shaped. During the passage through the various rolls the rod is often crushed from the sides of the opposing rolls and a "fin" or "overfill" formed on the side of the rod, near the front and rear ends of the rod. This "fin" or "overfill" will cause an imperfect round when the rod is passed through the "finished oval" and "finishing round" stands of rolls. Imperfect portions of the rod must then be discarded as waste. My invention removes this "fin" or "overfill" from the rod just before the rod enters the "finishing oval" and "finishing round" stands of rolls and eliminates almost all the waste.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a side elevation of the rod trimming device.

Figure 2 is a bottom elevation of the rod trimming device with some of the parts removed.

Figure 3 is a perspective view of a section of rod showing the "fin" or "overfill" thereon.

Figure 4 is a perspective view of a section of rod showing a section of rod after it has been passed through the device and the "fin" or "overfill" removed.

By referring to the drawing it will be seen that a rod trimming device comprising a body member 1 has been provided with hanger brackets 2 and 3 adapted to position the device upon and between the delivery guides and receiving guide of two stands of finishing rolls, in such manner that a rod 4 will pass through the device after leaving one set of rolls and before entering the next set. In order that both the hanger brackets 2 and 3 may be adjusted to position the device correctly, they have been attached to the body member 1 of the device through slotted openings 5 by means of screws 6. Positioned at the upper end of this body member 1 and between portions of the hanger bracket 2 there is a removable "trumpet" or guide 7 which serves to receive the rod 4 and guide it through an opening 8 formed in the body member 1. This removable guide 7 is attached to the body member 1 by means of lugs 9 formed on either side

of the guide 7 and adapted to engage openings in spring clips 10 which in turn are attached to the body member 1 in such manner that they may be sprung outwardly to release the lugs 9 and thus permit the guide 7 to be removed. The opening 8 is slightly larger than the rod 4 and serves to hold the rod in correct position as it enters a hollowed out portion of the body member 1 in which a pair of cutting dies 11 and 12 are positioned. These dies 11 and 12 have matched opposing cutting edges 13 and 14 adapted to trim the "fin" or "overfill" from portions of the rod 4 having these undesirable portions formed thereon. These dies 11 and 12 are movably positioned within the hollowed out portion of the body member 1 and are provided with pivot lugs 15 and 16 formed on both their upper and lower surfaces, these oppositely disposed pivot lugs 15 and 16 are of sufficient length to extend above and below the surfaces of the body member 1. In order that the rod 4 may enter the dies 11 and 12 without immediately contacting the cutting edges 13 and 14, means for moving the dies into an open position as indicated by numerals 11A and 12A are provided and comprise oppositely disposed pairs of slots 17 and 18 formed in removable portions 19 and 20 of the body member 1. These oppositely disposed pairs of slots 17 and 18 guide the dies 11 and 12 into open position by means of the pivot lugs 15 and 16 which extend through these slots 17 and 18. The shape of the slots 17 and 18 causes the pivot lugs 15 and 16 to slide the dies 11 and 12 forwardly and to either side when moved, thus placing the dies 11 and 12 in an open position as shown by numerals 11A and 12A. In order that these dies 11 and 12 may be easily moved in and out of cutting position, operating arms 21 are pivoted at points 22 to an extension 23 of the body member 1 and are provided at their outer extremities with oppositely disposed lugs 24 which are adapted to receive any convenient handle or operating lever desired. The opposite ends of these operating arms 21 are provided with pivot lugs 25 which are adapted to be connected to the pivot lugs 15 and 16 by means of a plurality of links 26. In order that water under pressure may be introduced into the device at a point adjacent to the dies 11 and 12 a threaded opening 27 is provided so that sufficient water may be introduced at this point to prevent over heating of the dies 11 and 12.

It will be seen that motion exerted through these operating arms 21 will cause the dies 11 and 12 to open and close at the will of the operator, and that these dies 11 and 12 may be easily removed for replacement by removing either of the portions 19 and 20 of the device.

It will also be seen that the dies 11 and 12 when in trimming position will to all intents and purposes be wedged at their sides into the hollowed out portion of the body member 1.

Obviously the shape of the dies 11 and 12 and particularly the shape of the cutting edges thereof may be changed to suit any shape of rod being trimmed.

What I claim is:

1. In a rod trimming device, adapted to be positioned between the stands of a continuous rolling mill, and comprising a body member, a pair of dies having opposing cutting edges movably positioned within the said body member and adapted to trim the "fin" or "overfill" from a rod being passed therethrough, the said dies being positioned adjacent to and parallel with the said rod when in trimming position and held in correct trimming position by their wedging, through their sides, against a hollowed out portion of the said body member, together with means for moving the said dies to an open position so that a rod entering the device will pass the cutting edges thereof with ease, and to move the said dies to a trimming position once the rod has entered between the said dies.

2. In a rod trimming device adapted to be positioned between the stands of a continuous rolling mill, and comprising a body member, adjustable hanger brackets on the said body member adapted to hold the said device between and upon the delivery guides and receiving guide of a pair of stands of rolls, a pair of dies positioned within the said body member, opposing cutting edges on the said dies, adapted to receive a rod between them and trim the "fin" or "overfill" therefrom as it passes therethrough, the said dies being positioned adjacent to and parallel with the said rod when in trimming position and held in correct trimming position by their wedging, through their sides, against a hollowed out portion of the said body member, means for moving the said dies from trimming position to open position to enable the rod to enter the said dies freely, and to move the said dies to trimming position once the rod has entered between them.

3. In a rod trimming device comprising a body member adapted to be positioned between the stands of a rolling mill, movable opposing dies placed within the said body member and adapted to trim the "fin" or "overfill" from a rod being passed therethrough, the said dies being positioned adjacent to and parallel with the said rod when in trimming position and held in correct trimming position by their wedging, through their sides, against a hollowed out portion of the said body member, a guide positioned at one end of the said body member and adapted to receive the rod as it enters the device and guide it into the said dies, and to hold the rod in correct position as it passes through the said dies, means for moving the said dies to an open position to permit the said rod to enter between them, and to close them to a trimming position once the rod has entered between them.

4. In a rod trimming device adapted to trim the "fin" or "overfill" from a rod being shaped in a rolling mill, comprising a body member, hanger brackets adjustably attached to the said body member and adapted to hold the device in correct position between the stands of the said rolling mill, a pair of trimming dies, having opposing cutting edges formed thereon, positioned within the said body member, oppositely disposed slots formed in the upper and lower portions of the said body member, pivot lugs formed on the said dies and extending through the said oppositely disposed slots in such manner that movement of the said pivot lugs will cause the said trimming dies to move to an open position or to a trimming position as desired.

5. In a rod trimming device adapted to trim the "fin" or "overfill" from a rod being shaped in a rolling mill, comprising a body member, hanger brackets attached to the said body member by means of screws position through slotted openings in the said hanger brackets so as to be adjustable in relation to the said body member, and adapted to hold the device in correct position between the stands of the said rolling mill, a pair of trimming dies having opposing cutting edges formed thereon, positioned within

the said body member, oppositely disposed pairs of slots formed in the said body member, and at angles to one another, pivot lugs formed on the said dies and extending through the said oppositely disposed slots in such manner that movement of the said pivot lugs will cause the said trimming dies to move apart at angles, due to the guiding action of the said oppositely disposed slots, operating arms pivoted to the said body member, links connecting the said pivot lugs on the said dies to the said operating arms so that movement of the said operating arms results in synchronized movement of the dies through the said pivot lugs.

6. In a rod trimming device comprising a body member adapted to be positioned between the stands of a rolling mill, movable opposing dies placed within the said body member and adapted to trim the "fin" or "overfill" from a rod being passed therethrough, a guide positioned at one end of the said body member and adapted to receive the rod as it enters the device and guide it into the said dies, and to hold the rod in correct position as it passes through the said dies, means for moving the said dies to an open position to permit the said rod to enter between them, and to close them to a trimming position once the rod has entered between them, the said means comprising oppositely disposed slots positioned in the said body member in the upper and lower portions thereof, and at an angle to one another, pivot lugs formed on the said dies, and adapted to function in the said slots, operating arms pivoted to the said body member, links attached to the said pivot lugs and to the said operating arms, so that movement of the said operating arms results in synchronized movement of the said dies to either an open or a trimming position.

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