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SHEARS FOR TRIMMING SHEET METAL

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Fig. 1.

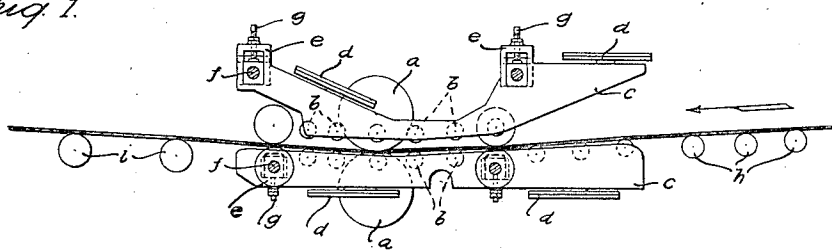


Fig. 3.

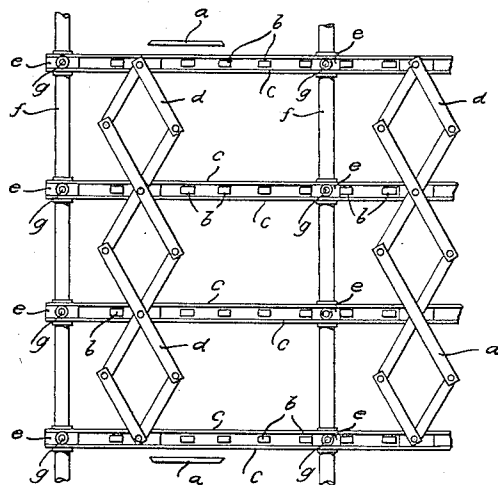
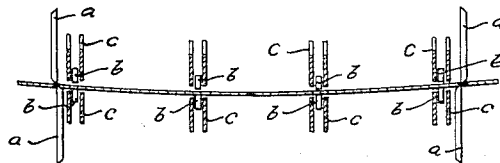


Fig. 2.



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SHEARS FOR TRIMMING SHEET METAL

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3 Claims. (Cl. 164—60)

My invention relates to a shear for trimming sheet metal and particularly to the means for guiding and supporting the sheets or packets of sheets while being trimmed along their edges by the circular blades of the shear. For this purpose, rollers are generally provided which engage the sheets from the top, and which are so arranged as to lie in one horizontal plane, a similar series of rollers being also provided for engaging the sheets from the bottom. The sheets are therefore constrained to adjust themselves into horizontal planes at their points of contact with the rollers. Since the sheets are usually fed to the trimming shear directly after their passage through the rolling mill, without first being operated upon by a straightening machine, the sheets are liable to exhibit a very marked curvature in one direction so that, when being passed between the rollers of the shear, they are submitted to heavy stresses and bulge out considerably towards the opposite side at those places where they are not gripped by the rollers. This, of course, is very undesirable since the sheets will be deformed unevenly throughout their length and the trimmed edges will therefore not be exactly parallel.

The object of my invention is to provide a shear for trimming sheet metal in which the aforementioned drawbacks are avoided. This I accomplish by arranging the guiding and supporting rollers of the shear in planes which match as closely as possible the curvature of the sheets that are to be trimmed so that the sheets will no longer be deformed when introduced between the rollers. Means are also provided to adjust the rollers to different curvatures and thicknesses of the sheets or packets of sheets.

The invention is illustrated by way of example in the accompanying drawing in which

Fig. 1 is a side elevation of a trimming shear, according to the invention,

Fig. 2 is an end elevation, and

Fig. 3 a plan view of the guiding and supporting rollers and the parts associated with them.

The shear according to this invention comprises two pairs of circular blades *a* for trimming sheets or packets of sheets which, since they do not form part of the invention, are represented in a purely diagrammatic manner and without their driving means.

For guiding and supporting the sheets or packets of sheets which are introduced into the shear, rollers *b* are provided which are arranged in a

plurality of parallel rows above and below the sheets so as to engage the latter both from the top and the bottom. The rollers *b* are mounted in suitable carriers *c*.

According to this invention the rollers *b* are so located as to match the curvature of the sheets delivered to them. As a rule, this curvature is determined by conditions which are not liable to change during the operation of the shear. Means not shown here can however be provided to vary the position of each individual roller *b* so as to vary also the curvature defined by the whole set of rollers. The sheets will usually exhibit a marked curvature only in one direction, i. e. either parallel or normal to the trimmed edges, so that the rolls will be adjusted either in the position of Fig. 1 or Fig. 2.

The roller carriers *c* are connected with one another by lazy-tongs mechanisms *d*, for the purpose of keeping the distance between the roller carriers constant for different positions of the shears *a*.

The upper and lower roller carriers *c* embrace by means of stirrups *e* the transverse beams *f* that support them, against which they bear by means of screws *g*. By adjusting these screws the distance between the upper and lower carriers can be varied, and therefore also the distance between the rollers *b* mounted thereon. The packets of sheets are fed to the circular shears in the direction of the arrow in Figure 1 over a feed table *h*, and are then engaged by the rollers *b*, while they are cut by the shears *a* at these edges, and then carried away on the discharge table *i*. The tables *h* and *i* are likewise so constructed that they adapt themselves to the curvature of the packets of sheets.

My invention can also be applied to shears which have more than two pairs of blades, such as shears for slitting metal sheets.

I claim as my invention:

1. A shear for trimming metal sheets, comprising, in combination with a plurality of cutters, a plurality of groups of guiding and supporting rollers adapted to engage the sheets from above and below in the direction of feed and disposed along a curve conforming to the longitudinal and transverse curvature of the metal sheets to be trimmed, and means for adjusting the position of each individual group of said rollers relative to the sheets.

2. A shear for trimming metal sheets, comprising in combination with a plurality of cutters, a plurality of groups of guiding and supporting rollers adapted to engage the sheets from

above and below in the direction of feed and disposed along a curve conforming to the longitudinal and transverse curvature of the sheets to be trimmed, and conveying rollers provided in advance of and after said guiding and supporting rollers and likewise disposed along a curve conforming to the longitudinal curvature of the metal sheets to be trimmed.

3. A shear for trimming metal sheets, comprising, in combination with a plurality of cutters,

a plurality of groups of guiding and supporting rollers adapted to engage the sheets from above and below in the direction of feed and disposed along a curve conforming to the longitudinal and transverse curvature of the metal sheets to be trimmed, carriers for each group of said rollers, and means for adjusting the position of each carrier independent of the other carriers.

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