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APPARATUS FOR SLITTING LITHOGRAPHED METAL SHEETS

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Fig. 1.

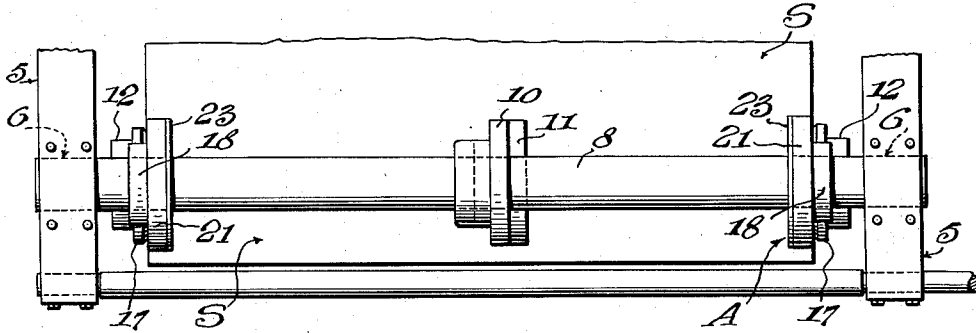


Fig. 2.

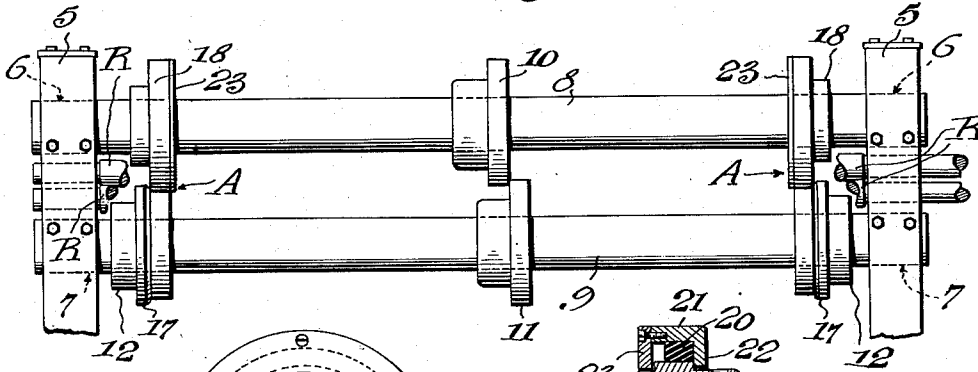


Fig. 3.

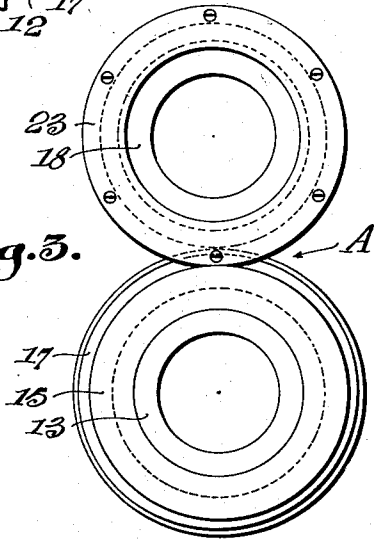
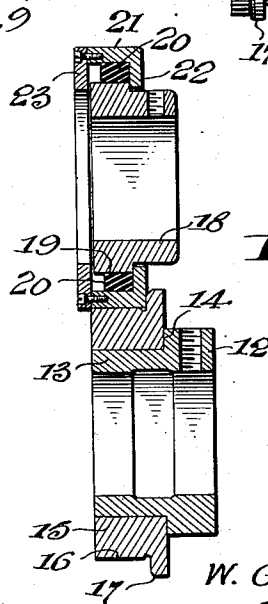


Fig. 4.



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APPARATUS FOR SLITTING LITHOGRAPHED METAL SHEETS

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9 Claims. (Cl. 153—2)

The invention relates generally to means for slitting metal sheets incident to the formation of can body blanks and has for an object to provide novel means for gaging the sheets and guiding the same during the slitting operation by edge contact with said sheets, and for simultaneously ironing or smoothing the edge portions of the sheets to eliminate any existing imperfections therein.

In the formation of body blanks from lithographed metal sheets, the sheet is first edge-trimmed and dimensioned to receive the desired lithographing, and then the lithographed sheets are slit through the center as a step in the formation of can body blanks. The invention resides in the provision of novel flanged roller equipments for engaging the sheets at their edges during the center slitting thereof in order to accurately guide the slitting operation, said equipments including novel hub extensions and opposed floatably mounted rings between which the guided edge portions of the tin sheets are ironed for the purpose of having any existing edge imperfections removed therefrom.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more fully understood by following the detailed description, the appended claims, and the several views illustrated in the accompanying drawing.

In the drawing:

Figure 1 is a plan view of a sheet slitting apparatus embodying the invention.

Figure 2 is a face view of the parts shown in Fig. 1, the feeder rolls being broken away.

Figure 3 is an enlarged detail face view of one of the sheet edge gaging and ironing roller equipments.

Figure 4 is a vertical cross-section taken through the axes of the rollers shown in Fig. 3.

In the drawing I have illustrated portions of a sheet slitting apparatus embodying the invention. This apparatus includes suitable framing 5 in which upper and lower bearings are provided at 6 and 7 for the shafts 8 and 9 which respectively carry the upper and lower cooperating sheet slitting rolls or disks 10 and 11.

The sheets S are fed to the slitting disks by any suitable means (not shown), and are fed from the slitting apparatus by cooperating upper and lower feed rolls R—R to which rotation is imparted by any suitable means (not shown).

At each side of the apparatus, and mounted upon the shafts 8 and 9, there is provided a sheet

edge gaging and ironing roller equipment generally designated A, and the invention resides in the provision of these novel equipments. It will be noted by reference to Figs. 1 and 2 of the drawing that the sheet slitting plane occupied by the meeting faces of the slitting disks 10 and 11 is centered between said equipments so that the sheets guided by the devices A are perfectly aligned and divided.

At each side of the apparatus the lower shaft 9 has secured thereon a collar 12 having an inwardly directed mounting sleeve portion 13 and an abutment collar 14. An inner ring 15 encircles the mounting sleeve 13 and includes a cylindrical ironer surface 16 and a bevelled gage flange 17, the former being adapted to support an edge portion of a sheet S being fed through the apparatus, and the latter serving to engage and guide said edge and thereby cooperate in the gaging and centering of the sheets.

At each side of the apparatus the upper shaft has secured thereon a collar 18 including a peripheral enlargement or shoulder ring 19. A rubber cushion ring 20 surrounds the enlargement 19, and an ironer ring 21 surrounds the cushion ring. The ironer ring is thus yieldably or floatably mounted on the enlargement 19 and it carries an integral flange 22 and a removably mounted flange 23 both inwardly directed to lie at opposite sides of the enlargement 19 for the purpose of preventing lateral displacement of the ironer ring 21. It will be observed by reference to Figs. 2 and 4 of the drawing that the floatably mounted ring 21 has rolling contact with the ironer surface 16 of the edge ironing and gaging ring 15 and will cooperate with that surface in smoothing out any surface imperfections present in sheets passing through the slitting apparatus.

As sheets are passed through the slitting apparatus, the edges thereof will pass between the ironer roll or ring elements 21 and 15 and have surface imperfections removed therefrom, and by reason of the contact of the sheet edges with the flanges 17 the sheets will be perfectly centered with respect to the slitting disks 10 and 11.

It is to be understood that the specific construction of the sheet edge gaging and ironing roller equipments, and the manner of floatably mounting the ironer ring, may be varied without departing from the spirit of the invention as pointed out in the appended claims.

I claim:

1. In apparatus of the character described, a

sheet edge guiding and ironing unit comprising a pair of opposed ironer rings one of which is floatably mounted, and a radially projected guide flange carried by one of the rings and peripherally overlapping the other of said rings.

2. An ironer ring unit comprising a mounting ring having a peripheral enlargement, an ironer ring element concentrically spaced from said enlargement, means for yieldably supporting said ironer ring element on said enlargement, and means engageable with said enlargement for preventing lateral displacement of the ironer ring element with respect to the enlargement.

3. An ironer ring unit comprising a mounting ring having a peripheral enlargement, an ironer ring element concentrically spaced from said enlargement, a rubber ring filling the space between the enlargement and the ironer ring element, and flanges carried by the ironer ring element and extending inwardly at opposite sides of said enlargement to prevent lateral displacement of said ironer ring element.

4. In apparatus of the character described; a sheet edge guiding and ironing unit comprising a pair of opposed ironer rings one of which includes a mounting ring having a peripheral enlargement, an ironer ring element concentrically spaced from said enlargement, means for yieldably supporting said ironer ring element on said enlargement, and means for preventing lateral displacement of the ironer ring element with respect to said enlargement; the other of said pair of opposed ironer rings including an ironer surface opposed to said ironer ring element, and a sheet edge abutting gage flange.

5. In apparatus of the character described; a sheet edge guiding and ironing unit comprising a pair of opposed ironer rings one of which includes a mounting ring having a peripheral enlargement, an ironer ring element concentrically spaced from said enlargement, means for yieldably supporting said ironer ring element on said enlargement, a rubber ring filling the space between the enlargement and the ironer ring element, and flanges extending inwardly at opposite sides of said enlargement to prevent lateral displacement of said ironer ring element; the other of said pair of opposed ironer rings including an ironer surface opposed to said ironer ring element, and a sheet edge abutting gage flange.

6. In apparatus of the character described the combination of upper and lower rotary shafts, cooperatively engaging sheet slitting elements one rotatably carried by each of said shafts, and a sheet guiding and ironing unit disposed at each side of the slitting elements for guiding the

sheets fed through the slitting elements and for ironing out surface imperfections in the edges of said sheets, each of said units comprising ironer ring elements rotatable with said shafts and arranged in opposed relation for rolling contact with the edges of the sheets, and a gage flange carried by one ring element of each unit.

7. In apparatus of the character described the combination of upper and lower rotary shafts, cooperatively engaging sheet slitting elements one rotatably carried by each of said shafts, and a sheet guiding and ironing unit disposed at each side of the slitting elements for guiding the sheets fed through the slitting elements and for ironing out surface imperfections in the edges of said sheets, each of said units comprising ironer ring elements rotatable with said shafts and arranged in opposed relation for rolling contact with the edges of the sheets, and a gage flange carried by one ring element of each unit, one ring element of each unit being floatably mounted.

8. In apparatus of the character described the combination of upper and lower rotary shafts, cooperatively engaging sheet slitting elements one rotatably carried by each of said shafts, and a sheet guiding and ironing unit disposed at each side of the slitting elements for guiding the sheets fed through the slitting elements and for ironing out surface imperfections in the edges of said sheets, each of said units comprising ironer ring elements rotatable with said shafts and arranged in opposed relation for rolling contact with the edges of the sheets, and a gage flange carried by one ring element of each unit, one ring element of each unit including concentrically spaced rings and an intermediate cushion ring for floatably mounting the outermost of said spaced rings.

9. In apparatus of the character described the combination of upper and lower rotary shafts, cooperatively engaging sheet slitting elements one rotatably carried by each of said shafts, and a sheet guiding and ironing unit disposed at each side of the slitting elements for guiding the sheets fed through the slitting elements and for ironing out surface imperfections in the edges of said sheets, each of said units comprising ironer ring elements rotatable with said shafts and arranged in opposed relation for rolling contact with the edges of the sheets, and a gage flange carried by one ring element of each unit, one ring element of each unit including concentrically spaced rings and an intermediate cushion ring for floatably mounting the outermost of said spaced rings, and means preventing lateral displacement of each floatably mounted ring.

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