E. W. ROBINSON.

SHEET METAL HOOP FORMING MACHINE.

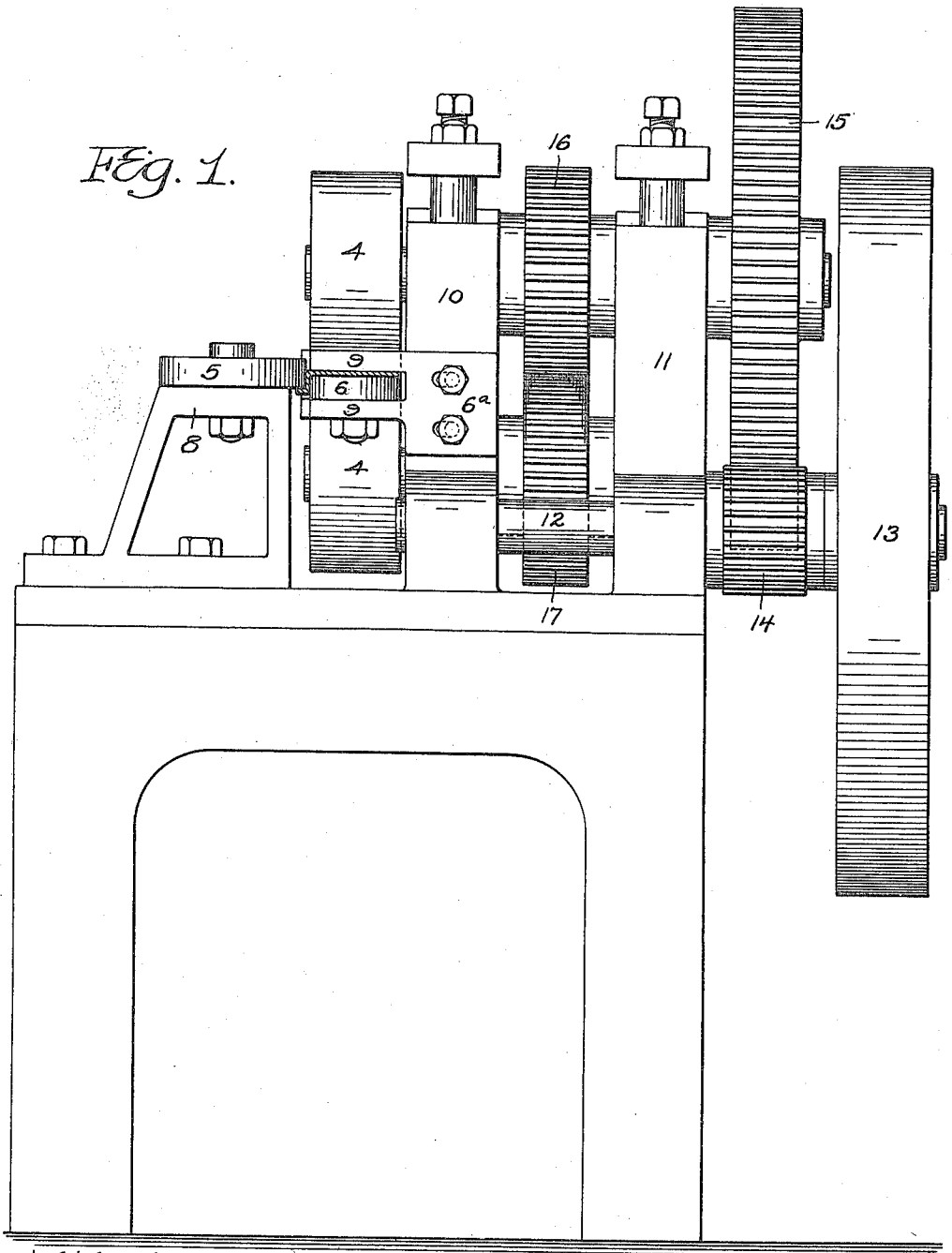
APPLICATION FILED JAN. 7, 1915.

1,158,294.

Patented Oct. 26, 1915.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

Hamilton D. Turner

Elsie Fullerton

INVENTOR

EDWARD W. ROBINSON

BY HIS ATTORNEY

Harry Smith

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

E. W. ROBINSON.

SHEET METAL HOOP FORMING MACHINE.

APPLICATION FILED JAN. 7, 1915.

1,158,294.

Patented Oct. 26, 1915.

3 SHEETS—SHEET 2.

Fig. 2.

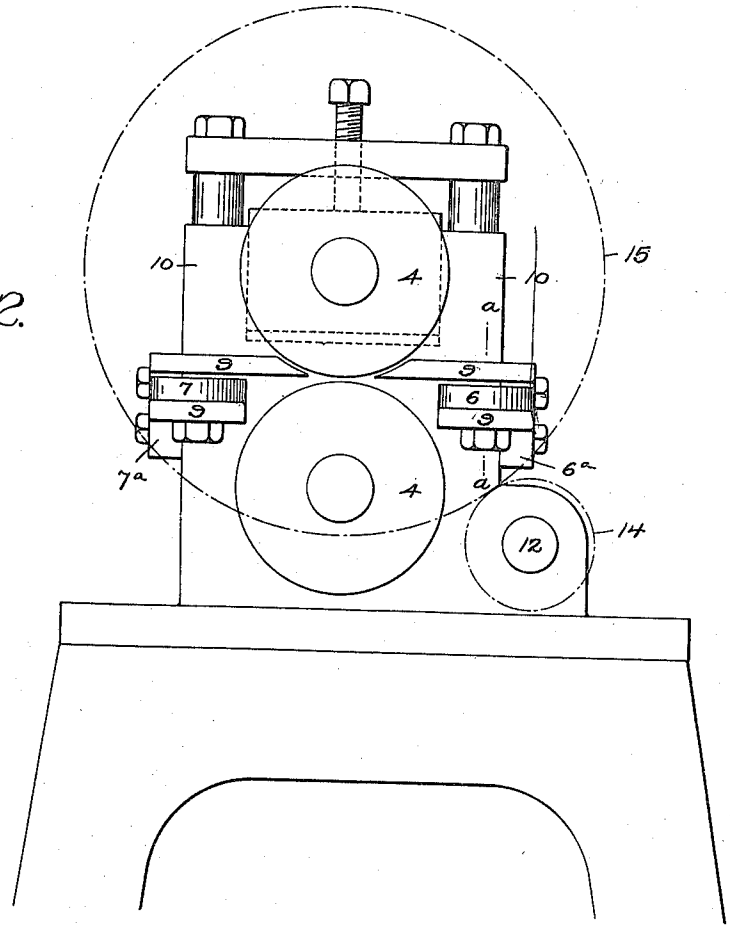


Fig. 3.

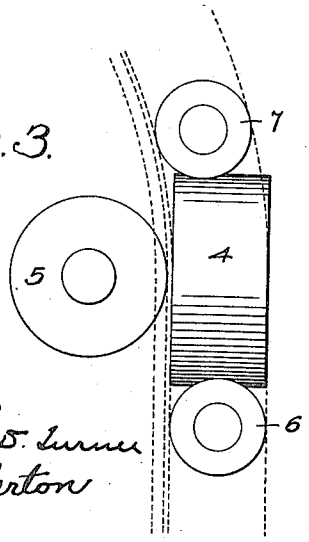
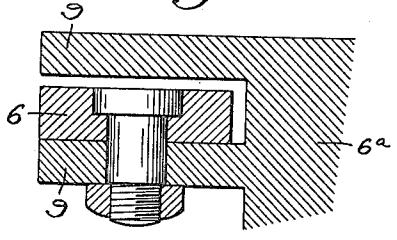


Fig. 4.



WITNESSES

Hamilton S. Turner

Elsie Sullerton

INVENTOR

EDWARD W. ROBINSON

BY HIS ATTORNEY

Harry Smith

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

E. W. ROBINSON.

SHEET METAL HOOP FORMING MACHINE.

APPLICATION FILED JAN. 7, 1915.

1,158,294.

Patented Oct. 26, 1915.

3 SHEETS—SHEET 3.

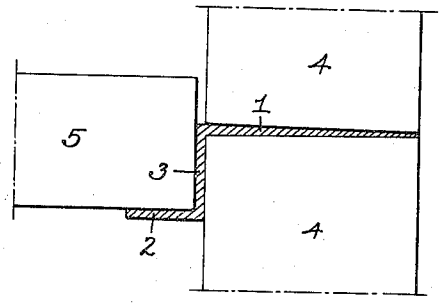
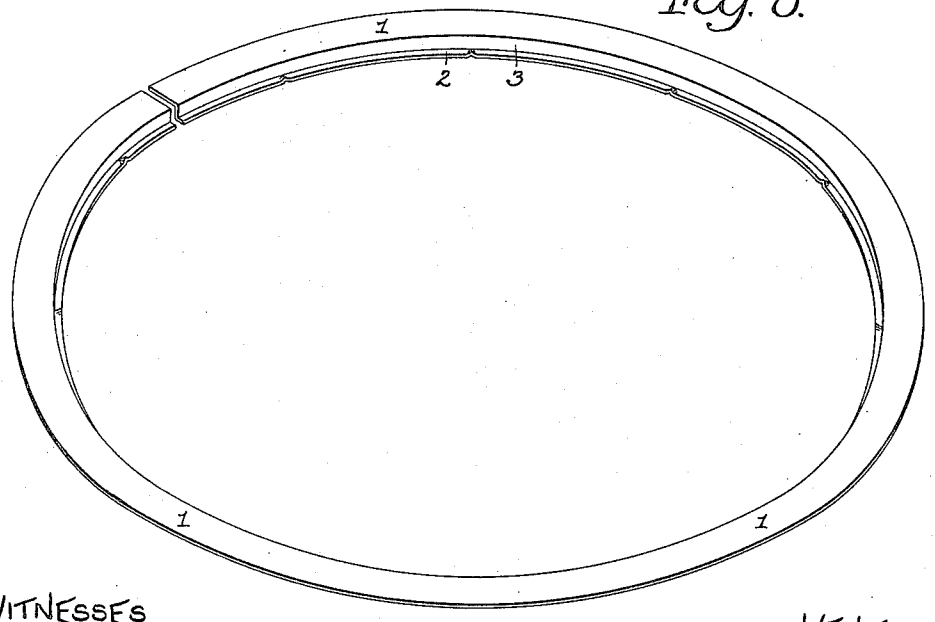


Fig. 7.

Fig. 5.

Fig. 6.



WITNESSES

Hamilton O. Turner

Elsie Fullerton

INVENTOR

EDWARD W. ROBINSON

BY HIS ATTORNEY

Harry Smith

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWARD W. ROBINSON, OF SAVANNAH, GEORGIA, ASSIGNOR TO INTERNATIONAL BARREL COMPANY, OF SAVANNAH, GEORGIA, A CORPORATION OF GEORGIA.

SHEET-METAL-HOOP-FORMING MACHINE.

1,158,294. Specification of Letters Patent. Patented Oct. 26, 1915.

Application filed January 7, 1915. Serial No. 946.

To all whom it may concern:

Be it known that I, EDWARD W. ROBINSON, a citizen of the United States, residing in Savannah, Georgia, have invented certain Improvements in Sheet-Metal-Hoop-Forming Machines, of which the following is a specification.

My invention consists of a machine for producing an annular blank for a hoop from a straight strip of sheet metal of angular cross section in accordance with the method set forth in my application for patent filed July 16, 1914, Serial No. 851,330.

In the accompanying drawing—Figure 1 is a side view of a hoop blank making machine constructed in accordance with my invention; Fig. 2 is a front view of the same with some of the parts removed; Fig. 3 is a top view in diagrammatic form illustrating the compression rolls and the bearing and guide rollers of the machine and their relation to one another; Fig. 4 is an enlarged transverse section on the line *a*—*a*, Fig. 2; Fig. 5 is a perspective view of the strip from which the hoop blank is to be produced, showing the same in the condition in which it enters the machine; Fig. 6 is a perspective view of the hoop blank after it issues from the machine, and Fig. 7 is a diagrammatic view, on a larger scale than the other figures, illustrating one of the features of the machine.

The sheet metal strip shown in Fig. 5 has two flanges 1 and 2 in parallel planes, and a connecting web 3 at right angles thereto, and in forming this straight strip into the hoop blank shown in Fig. 6, the flange 1 is expanded longitudinally at and near its free edge so as to cause said flange to bend edgewise, this operation also causing the web 3 to bend flatwise and the flange 2 to bend edgewise, the free edge of said flange 2 being thereby contracted in length so as to cause wrinkling of said flange, as shown in Fig. 6.

The machine which I have devised for producing this hoop blank from the straight strip has a pair of press rolls 4—4, a bearing roller 5, and guide rollers 6 and 7, disposed as shown in Figs. 1, 2 and 3. As shown in Fig. 7, the press rolls 4—4 are so shaped or set as to impart to the flange 1 pressure which gradually increases from that portion of the same adjacent to the web 3 to the free edge of the flange so as to cause longitudinal expansion of said flange at and near its free edge, such longitudinal expansion having the effect of bending edgewise the flanges 1 and 2 and bending flatwise the connecting web 3.

The axes of the rolls 4 are at right angles to the axes of the rollers 5, 6 and 7, and are preferably horizontal, those of the rollers 5, 6 and 7 being vertical, as shown in Figs. 1 and 2. The axis of the roller 5 is in line vertically with the axes of the rolls 4 and the periphery of said roller 5 bears upon the outer face of the web 3 of the strip at the bite of the rolls 4 and thereby prevents any distortion or displacement of said webs 3 at the point where the pressure is being imparted to the flange 1.

The peripheries of the rollers 6 and 7 bear against the inner face of the web 3 and extend up to the angle between said web and the flange 1, as shown in Fig. 4, so as to properly guide the strip in its movement to and from the rolls 4. The roller 6 engages the strip on its way to the rolls 4, and the roller 7 engages the strip as it issues from said rolls, and said roller 7 occupies a position a little farther outward than the roller 6 so as to accommodate the curve imparted to the strip by the action of the rolls 4, as shown in Fig. 3. The roller 7 is adjustable laterally to a limited extent so as to compensate for different degrees of curvature which may be imparted to the strip.

The roller 5 is mounted upon a bed 8 outwardly beyond the rolls 4, as shown in Fig. 1, and the rollers 6 and 7 are mounted between upper and lower projecting jaws 9 on plates 6^a and 7^a, both of these plates, or at least the plate 7^a, being mounted so as to be laterally adjustable on the front housings 10 which guide the forward boxes for the shafts of the rolls 4, the rear boxes for said shafts being carried by a rear housing 11, as shown in Fig. 1.

Any available means may be employed for rotating the shafts of the rolls 4, this constituting no essential part of my invention. In the present instance, however, I have shown a driving shaft 12 having a belt receiving pulley 13 and provided with a spur pinion 14 which meshes with a spur wheel 15 on the shaft of the upper roll 4, said shaft being geared to the shaft of the

lower roll 4 by means of a pair of intermeshing spur wheels 16 and 17, as shown in Fig. 1.

The upper jaw 9 of each of the plates 6^a and 7^a serves as a guide bar for that flange of the strip which is being acted upon by the rolls 4, said flange passing between the under face of said guide bar and the upper face of the roller, and said guide bar extending toward the upper roll 4 and being tapered at its inner end so as to extend as closely as possible to the bite of the rolls, as shown in Fig. 2.

It will be evident that the machine can be used with equally good effect in producing a hoop blank from a strip which is not provided with the flange 2.

I claim:

1. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of the flange than at the other portion of the same, and a bearing roller contacting with that member of the strip which is at an angle to the flange first mentioned.

2. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, and a guide and support roller located in advance of the press rolls and occupying the angle between the flange first mentioned and the member of the strip which is at an angle thereto.

3. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, and a guide and support roller located in the rear of the press rolls and occupying the angle between the flange first mentioned and the member of the strip which is at an angle thereto.

4. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, and a guide and support roller located in the rear of the press rolls and occupying the angle between the flange first mentioned and the member of the strip which is at an angle thereto, said roller being adjustable laterally to compensate for difference in the degree of curvature imparted to the strip.

5. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, and guide and support rollers one located in advance of the press rolls and the other in the rear of the same, said rollers occupying the angle between the flange first mentioned and the member which is at an angle thereto.

6. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, a roller for bearing upon the outer face of the member which is at an angle to the flange first mentioned, and a guide roller occupying the angle between said flange and said angular member, the bearing roller occupying a position adjacent to the bite of the press rolls, and the guide roller acting upon the strip as it approaches or leaves the press rolls.

7. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, a guide roller occupying the angle between the flange first mentioned and the member at an angle thereto, and a guide bar so located above said roller that the flange first mentioned can pass between it and the upper face of the roller.

8. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, a guide roller occupying the angle between said flange and the member at an angle thereto, and a guide bar so located above said roller that the flange can pass between it and the upper face of the roller, said guide bar having a tapered end adjacent to the upper press roll, whereby it serves to guide said flange as closely as possible to the bite of the rolls.

9. In a machine for producing a hoop blank from a straight strip of angular cross section, the combination of a pair of press rolls acting upon one of the flanges of the strip and approaching one another more closely at the free edge of said flange than at the other portion of the same, a roller for bearing upon the outer face of the member which is at an angle to the flange first men-

tioned, and a pair of guide rollers one in advance and one in the rear of the press rolls, said guide rollers occupying the angle between the flange which is being acted upon by the press rolls and the member which is at an angle thereto.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD W. ROBINSON.

Witnesses:
KATE A. BEADLE,
HAMILTON D. TURNER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."