

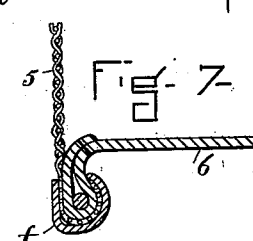
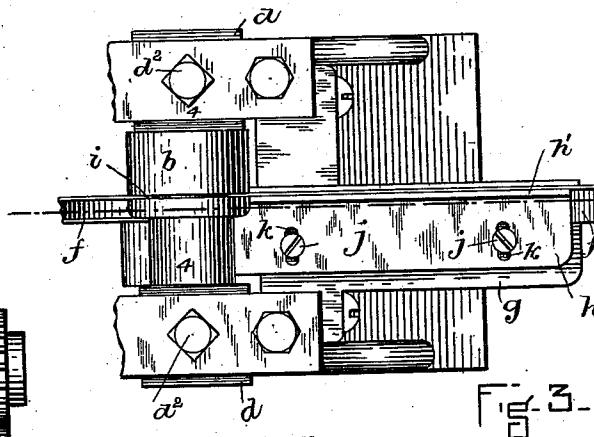
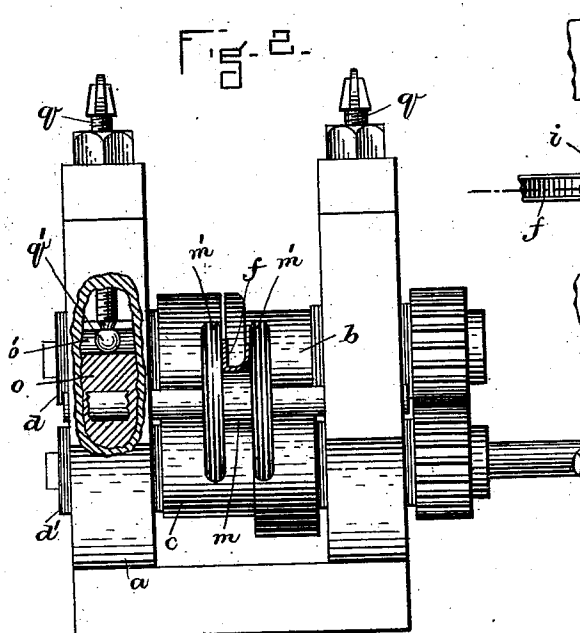
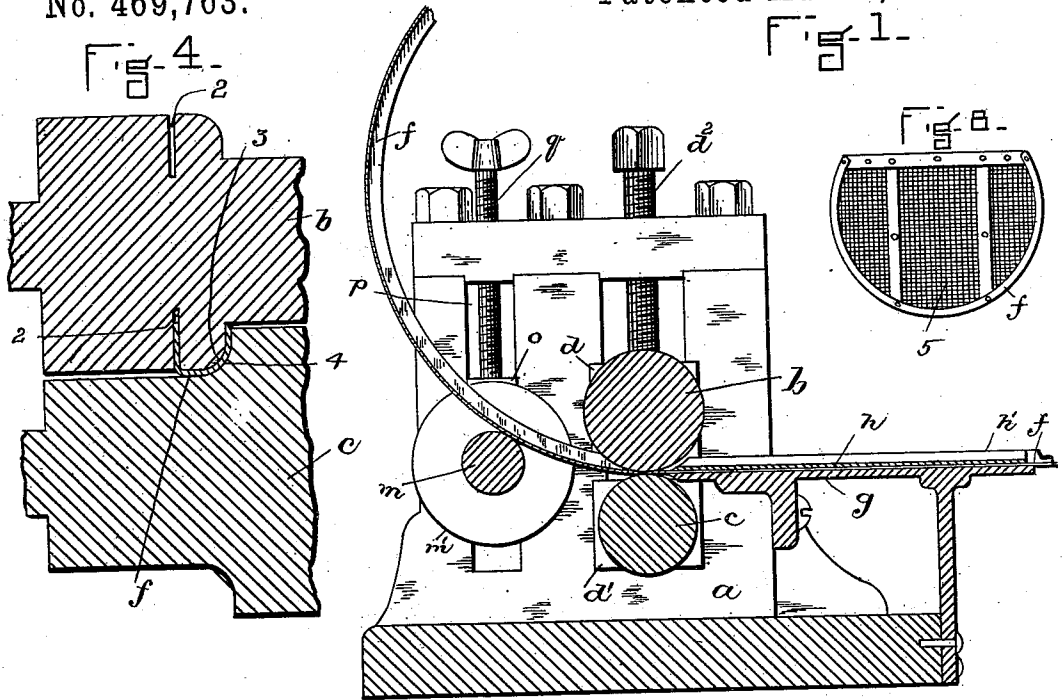
(No Model.)

J. H. WILLIAMS.

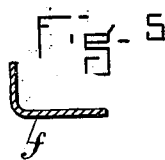
MACHINE FOR MAKING CURVED SHEET METAL BINDING PIECES.

No. 469,763.

Patented Mar. 1, 1892.



WITNESSES.
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UNITED STATES PATENT OFFICE.

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TO CHARLES A. MORSS, OF SAME PLACE.

MACHINE FOR MAKING CURVED SHEET-METAL BINDING-PIECES.

SPECIFICATION forming part of Letters Patent No. 469,763, dated March 1, 1892.

Application filed February 16, 1891. Serial No. 381,666. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. WILLIAMS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Making Curved Sheet-Metal Binding-Pieces, of which the following is a specification.

This invention has for its object to provide a simple and effective machine for bending a strip of sheet metal into a curved mat or binding-piece substantially U-shaped in cross-section and of curved or semicircular form longitudinally, said binding-piece being intended for use in the manufacture of nose-bags for horses in which a practically semicircular sheet of wire-cloth, forming a ventilating side of the bag, is united to a strip of canvas, forming the body of the bag, by means of a binding-piece or mat made by my improved machine.

The invention consists in the improved construction and combination of parts hereinafter described, whereby a strip of metal which is L-shaped in cross-section is converted into a U shape in cross-section and is longitudinally curved, as I will now proceed to describe.

In the accompanying drawings, forming a part of this specification, Figure 1 represents a longitudinal section of a machine embodying my improvements. Fig. 2 represents an end view of the same, partially in section. Fig. 3 represents a top view of a portion of the machine. Fig. 4 represents a section on line 4 4, Fig. 3. Fig. 5 represents a transverse section of the strip as formed for presentation to my improved machine. Fig. 6 represents a transverse section of the strip after it has been acted on by said machine. Fig. 7 represents a sectional view of a portion of the feed-bag, showing the completed binding-piece or mat in cross-section as applied to unite the wire side and canvas body of the bag. Fig. 8 represents a side view of the bag on a reduced scale.

The same letters and figures of reference indicate the same parts in all the figures.

a represents a supporting-frame in which are journaled a pair of flange-forming rolls *b c*, arranged as a pair and having journals adapted to rotate in boxes or bearings *d d'*,

supported by the frame *a*, the boxes *d d'* being vertically adjustable by means of adjusting-screws *d²*. The rolls *b c* are formed to impart to a strip of sheet metal *f*, which is L-shaped in cross-section, as shown in Fig. 5, substantially a U shape, as shown in Fig. 6. To this end the roll *b* is provided with a narrow peripheral groove 2, having straight or parallel sides said groove being formed to receive one arm of the L-shaped piece *f*, and with a convex shoulder 3, formed to co-operate with a corresponding concave shoulder 4 on the roll *c* in bending the other arm of the L-shaped strip into the form shown in Figs. 4 and 6, the bending being accomplished by a pass of the L-shaped strip between the rolls *b c*.

g represents a guide or table arranged in advance of the rolls *b c* and adapted to support the strip *f*. Above said table and separated from it by a space of sufficient width to permit the passage of one arm of the strip *f* is a gage-plate *h*, having at one edge a flange *h'*, which is arranged to bear against the upwardly-projecting arm of the strip *f* when the main body of the strip is resting upon the table *g*. The gage *h'* is arranged in line with one edge of the groove 2 in the roll *b*, as shown in Fig. 3. The gage-plate *h* may be secured to the table *g* in any suitable way, preferably by means of screws *j j*, passing through slots *k k* in said plate, as shown in Fig. 3. It will be seen that the strip *f* when moved along the table *g*, with its previously-formed arm or flange bearing against the gage *h'* and passed between the rolls *b c*, will be bent into the form shown in Fig. 6 and will emerge from the farther side of said rolls in said form. To adapt the strip thus formed to serve as a mat or binding-piece for uniting the woven-wire sides 5 to the canvas body 6 of a feed-bag, I bend the strip longitudinally as it passes from the rolls *b c*, as indicated in Fig. 1. This bending is accomplished by means of a flanged roll *m*, which is affixed to a shaft journaled in bearings *o o*, which are vertically adjustable in guides *p* in the supporting-frame, the flanges *m' m'* of said roll being formed to receive between them the strip *f* after the latter has been bent into the form shown in Fig. 6, as indicated in Fig. 2,

in which the strip *f* is shown between the flanges *m' m'*, which hold the sides of the strip against distortion or spreading. The portion of the roll with which the strip comes in contact as it emerges from the rolls *b c* is raised above the meeting points of said rolls, as shown in Fig. 1, so that the strip is obliged to curve upwardly from the position it occupies upon the table *g* in order to ride over the roll *m*, the strip being thus bent lengthwise between the point where it is supported by the rolls *b c* and the point where it bears on the roll *m*, so that as it moves along its entire length is given a gradual longitudinal curvature, as indicated in Fig. 1. The degree of the longitudinal curvature thus imparted to the strip may be varied by adjusting the roll *m* vertically, such adjustment being effected by means of adjusting-screws *q q*, working in threaded sockets in the frame *a* and having their lower ends engaged with the boxes *o o* in any suitable way which will cause the boxes to rise and fall with the screws. The means here shown for engaging the screws *q* with the boxes *o* are spherical enlargements *q'* on the screws, fitting in correspondingly-shaped sockets *o'* in the boxes, as shown in Fig. 2.

It will be seen that by this machine a strip of metal of the form shown in Fig. 5 may be converted into a double-flanged longitudinally-

curved mat or binding-piece of any desired length and of any desired degree of curvature, and it will also be seen that the straight or parallel sides of the groove 2 in the roll *b* serve to prevent any change in the shape of the straight or vertical side of the strip while the other portion of the strip is being curved or bent by the shoulders 3 and 4 of the rolls.

I claim—

1. The combination of the flanging-rolls *b c*, the strip-guiding table and gage at one side of said rolls, and the bending or curving roll at the opposite side of said rolls, said bending-roll having the vertical flanges *m' m'*, as set forth.

2. The combination of the flanging-rolls *b c*, the bending or curving roll having the vertical flanges *m' m'* and arranged to deflect a flanged strip passing from said rolls and hold its sides against distortion, and means for adjusting said bending-roll to vary the curvature imparted to the strip, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 12th day of February, A. D. 1891.

JOHN H. WILLIAMS.

Witnesses:

C. F. BROWN,
A. D. HARRISON.