

J. H. GAY & W. D. QUIGLEY.  
 SPRING ROLL FOR LEATHER SPLITTING MACHINES.  
 APPLICATION FILED DEC. 11, 1907.

903,559.

Patented Nov. 10, 1908.

2 SHEETS—SHEET 1.

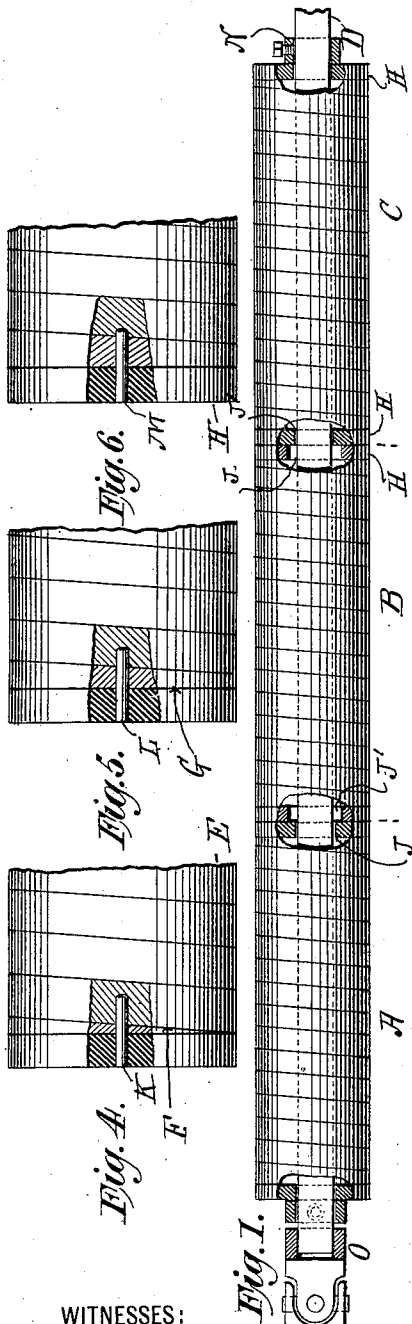


Fig. 3.

Fig. 2.

Fig. 7.

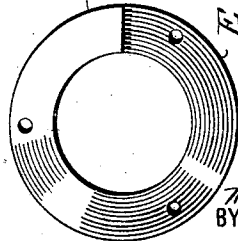
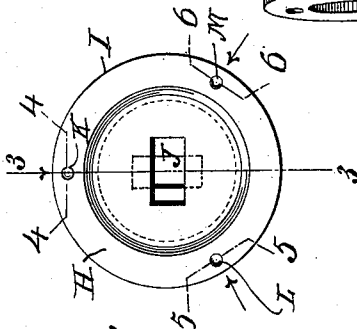
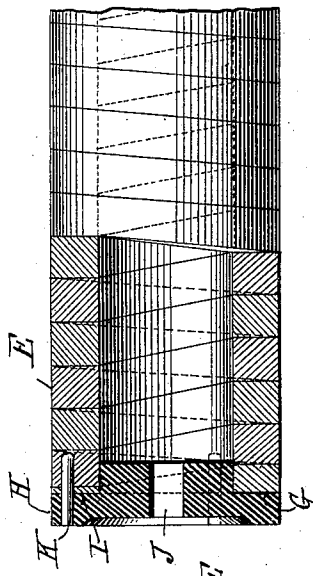
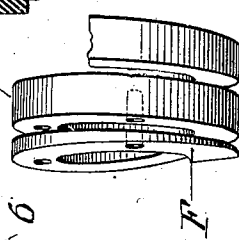


Fig. 8.



WITNESSES:  
*Gustav Reichenow*  
*Edwin H. Britton*

INVENTOR 3

*Joseph H. Gay*  
*William D. Quigley*  
 BY *Harold Benjamin*  
 ATTORNEY

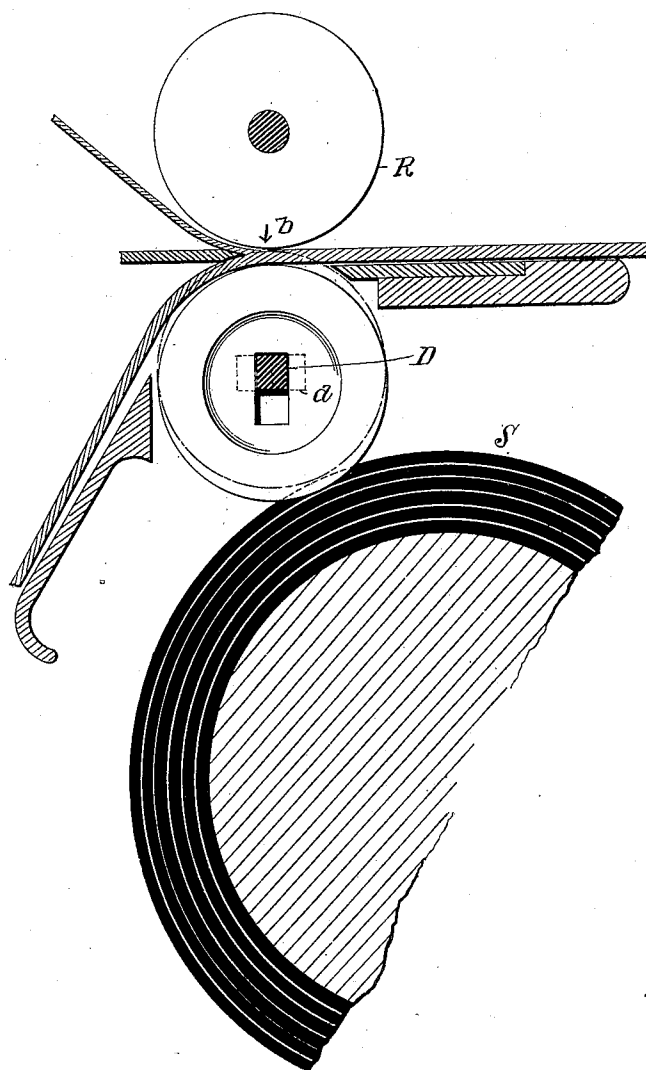
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2 SHEETS—SHEET 2.

*Fig. 9.*



WITNESSES:

*Chas. A. Dettmold*  
*Edwin W. Dittich*

INVENTORS

*Joseph H. Gay*  
*William D. Quigley*  
BY *Lawrence Benjamin*  
ATTORNEY

# UNITED STATES PATENT OFFICE.

JOSEPH H. GAY AND WILLIAM D. QUIGLEY, OF NEWARK, NEW JERSEY.

## SPRING-ROLL FOR LEATHER-SPLITTING MACHINES.

No. 903,559.

Specification of Letters Patent.

Patented Nov. 10, 1908.

Application filed December 11, 1907. Serial No. 406,051.

*To all whom it may concern:*

Be it known that we, JOSEPH H. GAY and WILLIAM D. QUIGLEY, citizens of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Spring-Rolls for Leather-Splitting Machines, of which the following is a specification.

10 The invention relates to spring rolls for leather splitting machines.

Our invention consists in a spring roll unit composed of a spiral of wire of polygonal cross section with its turns in contact to produce a substantially smooth exterior cylindrical surface, the said heads being directly attached to the end turns of said spiral: also in a spring roll composed of a plurality of said units disposed successively on a supporting axial shaft: also in the various combinations pointed out in the claims.

In the accompanying drawings—Figure 1 is a side elevation of our spring roll, with the heads of the roll units shown in section. Fig. 2 is an end view of one of the heads. Fig. 3 is an enlarged longitudinal section of the end of one of the roll units on the line 3. 3. of Fig. 2. Figs. 4, 5 and 6, each show the same end of the roll unit with the parts adjacent to the several fastening pins in section on the lines 4. 4., 5. 5. and 6. 6. of Fig. 2. Fig. 7 is an end view of the spiral forming a unit, the head being removed. Fig. 8 shows the end portion of the spiral forming a roll unit in perspective. Fig. 9 shows the relation of the spring roll to the upper or gage roll during the passage between them of an abnormally thick part of the hide.

40 Similar letters of reference indicate like parts.

The spring roll Fig. 1 may be of any desired length and composed of any number of roll units A, B, C. The roll units A, B, C, are all alike and are received upon the axial polygonal shaft D and there secured in any suitable way. Each roll unit is constructed as follows:

50 E is a spiral of wire of polygonal cross section, the turns being laid closely together to form a cylinder of substantially smooth periphery. At each end of the spiral, the wire E is tapered as shown at F (see Figs. 4, 5, 6, 8) so that, when the turns of the spiral are in contact, the end surfaces lie in planes parallel to one another and intersecting the

axis of the spiral at right angles. Into each end of the cylinder formed by the wire spiral fits a head H of metal, provided with a flange I, equal in diameter to the said cylinder. Each head has a central opening J, rectangular in cross section, which receives the rectangular shaft D. The shaft D is preferably square in cross section and the openings J in the several heads have each the form of a parallelogram.

Each head is attached to the end of the wire spiral by means of, preferably, equidistantly spaced pins K, L, M, which pass through the head and tapered end-turn F of the spiral and are seated in the next adjacent turn, see Figs. 4, 5, 6. By this construction, the heads are firmly secured to the ends of the spiral cylinders.

The complete spring roll unit is made up of several roll units placed end to end on the shaft D. In practice, for example, we have made said units seven inches in length and one and three-fourths inches in diameter, and put together fifteen of them to make a complete roll. By reason of short length of each unit, the friction of the hide on its exterior surface cannot cause the spiral to become more tightly or more loosely wound, and hence out of true, as might be the case, if the spiral were several feet in axial length.

The roll units are secured in position on the shaft D, by collars N, and clamping screws, or in any other suitable way, and the shaft D is driven in the usual way through a universal joint O, Fig. 1, from shaft P. The shaft D rests on the rubber roll S, Fig. 9.

The several roll units are disposed on the shaft D, so that the long sides of the openings J in successive units shall stand relatively at right angles. Thus the openings J in unit A and C, Fig. 1, stand at right angles to the openings J' in unit B.

When a thicker part of the hide or an obstruction therein comes between the gage roll R, and any one of the spring roll units said unit is forced downwardly, sliding transversely on its shaft D, as shown in Fig. 9, the periphery of the unit then sinking into the elastic surface of the rubber roll S. This transverse movement of the unit occurs when the opening J therein is in all positions, except when said opening has its long side at right angles to the direction of the force tending to push the unit down-

ward (arrow *b*, Fig. 9); or, in other words, is in the position shown in dotted lines at *a*, Fig. 9. The effect then is to move downward both unit and shaft instead of the unit only, and this movement of the shaft is permitted by the universal joint at O. Obviously, this condition occurs during only a small fraction of the period of rotation of the unit.

10 By reason of the foregoing construction we produce a spring roll formed in units each complete in itself, which may be combined in any desired number to form a roll of any given length. The resiliency of the roll is secured first by the elastic character of the spirals, and second, by the transverse sliding of the roll units on their supporting shaft and down upon their elastic rubber support, and third, and momentarily by the movement of both unit and shaft downwardly which as before results in the unit periphery sinking into the elastic surface of the rubber roll.

We claim:

25 1. As a new article of manufacture a spiral of wire of polygonal cross section with its turns in contact to produce a substantially smooth exterior cylindrical surface and circular heads entering said spiral and having flanges of the same diameter of said cylindrical surface; and fastening pins passing through said head flanges and seated and terminating in the end turns of said spiral.

35 2. In a spring roll, a plurality of detachable units, each unit comprising a spiral of wire of polygonal cross section with its turns in contact to produce a substantially smooth exterior cylindrical surface and a head directly attached to each end of said spiral, in combination with a polygonal shaft passing through said spirals and central openings in said heads.

45 3. In a spring roll, a driving shaft and a plurality of individual separable cylinders each formed of a wire spiral, and heads secured to the opposite ends of said spiral,

the said heads having a central shaft receiving opening in parallelogram form: the said heads of one cylinder being disposed with the longer sides of their openings at right angles to the openings in the heads of the next adjacent cylinder and the said shaft being rectangular in cross section and having one side of its cross-sectional area less in length than the longer side of the said head openings. 55

4. The combination of a gage roll, a spring roll and a roll having an elastic periphery, between which elastic roll and gage roll said spring roll is interposed, the said spring roll being formed of a plurality of individual separable cylinders each formed of a wire spiral, and heads secured to the opposite ends of said spiral, the said heads having a central shaft receiving opening in parallelogram form: the said heads of one cylinder being disposed with the longer sides of their openings at right angles to the openings in the heads of the next adjacent cylinder and the said shaft being rectangular in cross section and having one side of its cross-sectional area less in length than the longer side of the said head openings. 75

5. In a spring roll, a driving shaft and a plurality of hollow separable cylinders having heads, and in each of said heads a central shaft securing opening in parallelogram form, the said heads of one cylinder being disposed with the longer sides of their openings at right angles to the openings in the heads of the next adjacent cylinder, and the said shaft being rectangular in cross section and having one side of its cross-sectional area less in length than the longer side of the said head openings. 85

In testimony whereof we have affixed our signatures in presence of two witnesses.

JOSEPH H. GAY.

WILLIAM D. QUIGLEY.

Witnesses:

GERTRUDE T. PORTER,

PARK BENJAMIN, Jr.