July 21, 1953 W. S. SOUTHWICK 2,646,277

APPARATUS FOR DELIVERING WELDED WIRE FABRIC

Filed June 14, 1949 2 Sheets-Sheet 1

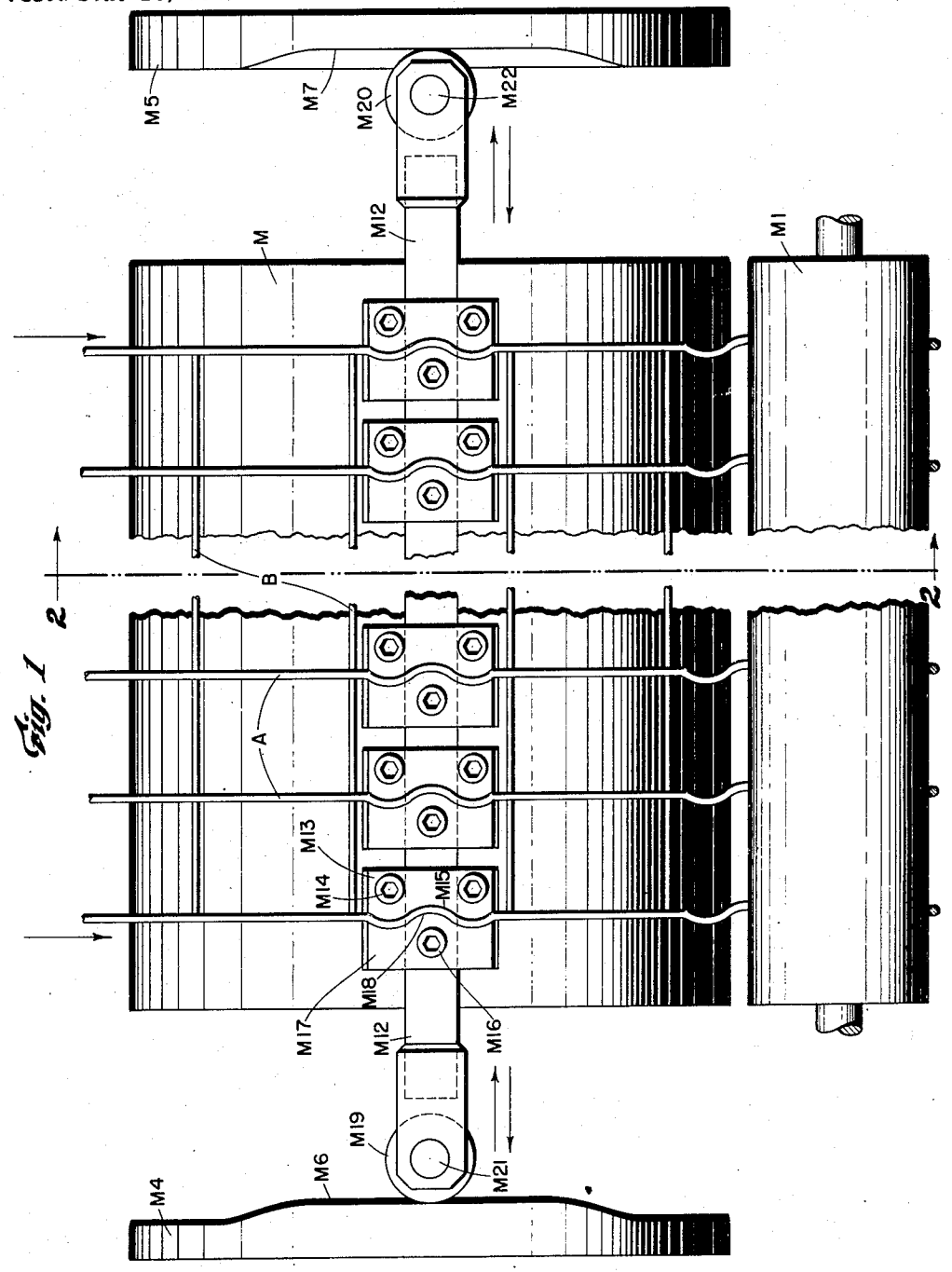


Fig. 1

WILLIAM S. SOUTHWICK
Inventor
by Edgar H. Kent
Attorney

July 21, 1953 W. S. SOUTHWICK 2,646,277

APPARATUS FOR DELIVERING WELDED WIRE FABRIC

Filed June 14, 1949 2 Sheets-Sheet 2

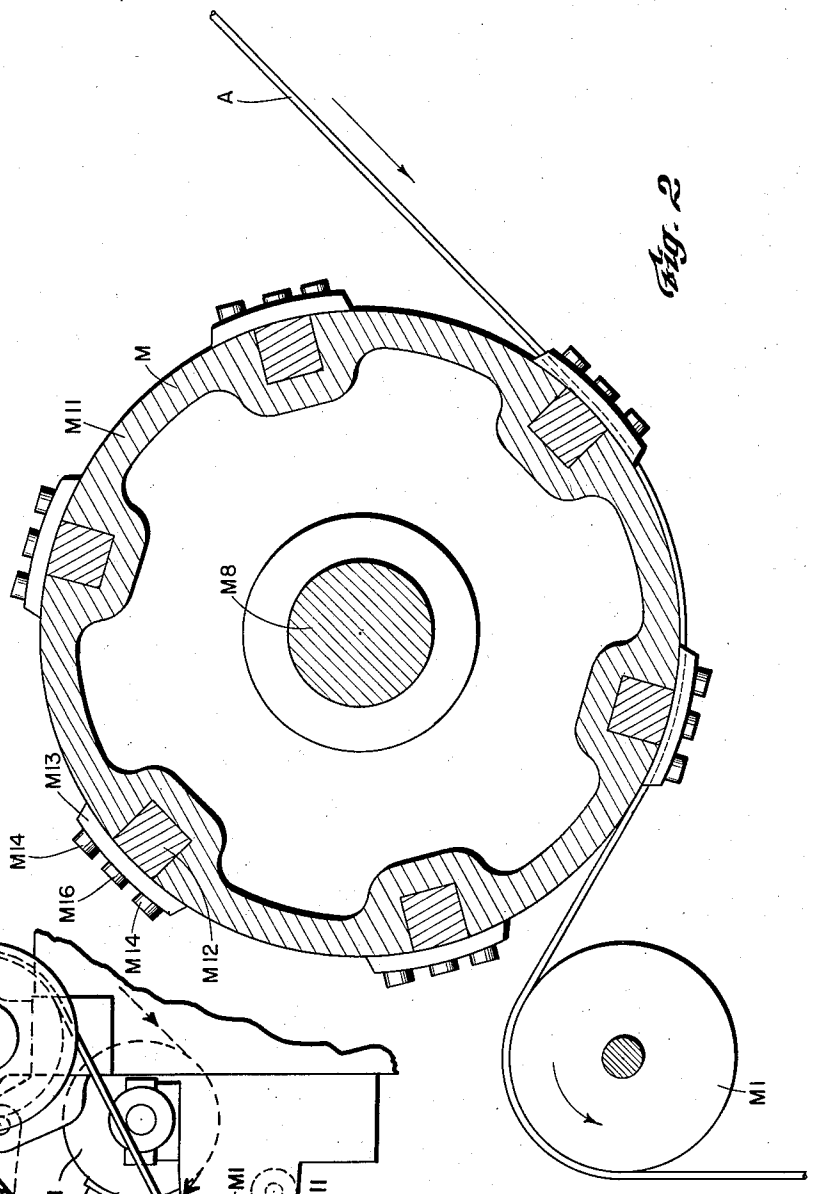


Fig. 2

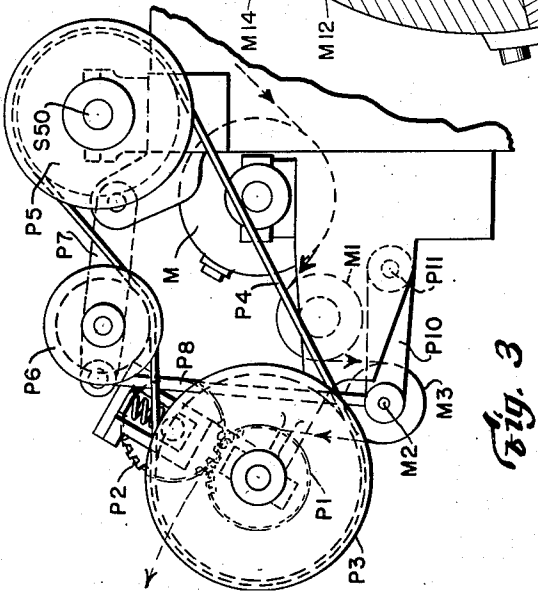


Fig. 3

WILLIAM S. SOUTHWICK
Inventor
by Edgar H. Kent
Attorney

Patented July 21, 1953 2,646,277

UNITED STATES PATENT OFFICE

2,646,277

APPARATUS FOR DELIVERING WELDED WIRE FABRIC

William S. Southwick, East Lynn, Mass., assignor to Thomson Electric Welder Company, Lynn, Mass., a corporation of Massachusetts

Application June 14, 1949, Serial No. 98,982

2 Claims. (Cl. 271—2.3)

1

This invention relates to a continuous wire fabric welder and in particular to the combination of means and a method to crimp the strand wires and deliver the welded fabric from the welder, the latter having been already described and claimed in my application, Serial No. 7008, filed February 7, 1948, issued November 8, 1949, as Patent No. 2,487,392, of which this is a continuation-in-part.

The principal object of this invention is to automatically control the tension in the strand wires of the welded fabric so that they may be properly crimped in spaced relationship to the stay wires.

Other objects and features of this invention will appear from the following description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a bottom plan view of the crimping means;

Fig. 2 is a cross-sectional view of the crimping means taken along line 2—2 of Fig. 1;

Fig. 3 is a side view of the delivery means.

As has been substantially stated in my Patent No. 2,487,392, and described in detail therein, the strand wires A, after having been straightened, are delivered to tubes in which they are held from bending. A plurality, more than two, or set of stay wires B are fed simultaneously in the machine across and above the tubes while the strand wires continue to advance. A set of stay wires are fed every time the strand wires advance a distance equal to the length of a mesh of the welded fabric multiplied by the number of stay wires in a set. The stay wires of a set are cut off into lengths slightly greater than the width of the fabric. Each stay wire is fed into a channel with an open bottom in a cross girt in which it is held by a gate. After the wires are fed in, the gates are withdrawn and each stay wire is cut and pushed down into a V-shaped opening, one side of which is forced to move by the wires in order to allow the wire to pass down onto the tubes and between the transverse rows of projections on chains, which travel between and parallel with the tubes. The projections carry the stay wires through the machine while the wires are held from upward displacement by bars and guides located adjacent to and over the stay wires. The strand wires are advanced by the movement of the welded fabric and the stay wires are advanced by the movement of the chains until they are welded to the strand wires. After the strand wires advance beyond the ends of the tubes, the stay wires drop down onto the strand wires. As

2

the strand wires and the chains continue to advance, each stay wire, before it comes to the welding position, is forced back by spring fingers against a transverse aligned row of projections on the chains to position the stay wires accurately on the strand wires at intervals corresponding to the length of the mesh of the fabric. The advance of the stand wires between disc electrodes rotates the electrodes which are free to rotate. As a stay wire is carried into the nip of the electrodes, a welding current is put on to form the weld as the upper electrode is pressed down with welding pressure against the lower electrode. The welding current is cut off after one or more cycles. The welded fabric is advanced through the machine, and the ends of the stay wires projecting beyond the outside strand wires are trimmed off. The fabric may be split and in such case the ends of the stays are also trimmed.

After the ends of the stay wires have been trimmed, the fabric passes under roller M, Fig. 3, which contains the crimping means of this invention, described in detail below.

With reference to Figs. 1 and 2, M4 and M5 represent cam wheels bolted to and supported by brackets, not shown, secured to the frame of the machine. The wheel M4 has a throw M6 and the wheel M5 has an indentation M7 complementary to the throw M6.

Rigidly mounted upon shaft M8, between the wheels M4 and M5, is arranged the roller M. The periphery M11 of the roller M is either cast or machined to receive the bars M12 held in place by bars M13 secured by screws M14 to the periphery M11. These bars M12 extend from the cam wheel M4 to the cam wheel M5. The number of bars M13 corresponds to the number of strand wires. The edge of each of these bars toward the cam wheel M4 is corrugated or shaped as at M15 to correspond to the form in which the crimp in the strand wire is to be made. This edge M15 serves as a stationary crimping jaw. Upon the top of each bar M12 by screws M16 is secured a second crimping bar M17 the edge of which opposite the edges M15 of the bars M13 are corrugated as at M18 as a complement of the corrugations M15. The bars M17 correspond in number to the bars M13 and, when forced together with a strand wire between them, form bends or crimps.

Each of the bars M12 is provided on the ends thereof, adjacent to the cam wheels M4 and M5 with wheels M19 and M20 which are rotatably mounted on pintles M21 and M22, respectively, the axes of which are perpendicular and radial

to the axis of the shaft M8. The wheels M19 and M20, as the roller is rotated, travel respectively around the cam wheels M4 and M5. The throw M6 and the indentation M7 are located at the bottom of their respective cam wheels. The throw M6 causes each wheel M19 to rise on the surface of the cam wheel M4 and thereby throws the bar M12 over to the right, Fig. 1. Simultaneously each wheel M20 is caused to move into the indentation M7. As each wheel M20 rises out of said indentation, each bar 12 is caused to move to the left, Fig. 1, and each wheel M19 travels off and down from the throw M6. By the above described motion of each bar M12, each bar M17 is forced into a position adjacent to each stationary bar M13 thereby crimping the strand wire in the jaws formed by the edges M15 and M18 as the fabric is carried under the roller M; and then is released from each bar M13 to open said jaws to allow the fabric to pass beyond the roller M.

The welded fabric then passes over roll M1, and under roll M3, Fig. 3, to the nip of a pair of pinch rolls P1 and P2. P1 is fast on an axle journalled in brackets on the frame. P2 is mounted in a bearing which is urged by a spring to press the roll P2 against the roll P1. The axle to which the roll P1 is fast has a driven pulley P3 driven by a driving belt P4 passing around a driving pulley P5 fast on the driving shaft S50 mounted on the frame. As shown in Fig. 3, the belt extends rearwardly from the pinch rolls toward the fabric supply.

An idler pulley P6 controls the tension of the belt P4, the pulley normally resting upon and pressing against the upper reach of the belt. The pulley P6 is mounted on a stud on an arm P7 pivoted to a bracket on the frame. At the outer end of the arm is pivoted a link P8 pivoted at its lower end to a vertically displaceable shaft M2 mounted in the ends of arms P10 fast to shaft P11 mounted in brackets on each side of the frame. The welded fabric passes under guide roll M3, on the shaft M2. When the feed of the pinch rolls is faster than the feed of the fabric, the latter lifts the guide roll M3 and the idler pulley P6 to relax the tension in the belt which then slips on either the pulley P3 or P5 or on both.

I claim:

1. An apparatus for delivering and controlling the tension and speed of welded wire fabric drawn from a supply thereof comprising a pair of pinch rolls between which said fabric is delivered and by means of which said fabric is drawn from said supply, a support structure, an axle for one of said rolls journalled in said support structure, a driven pulley mounted on said axle, a driving shaft and pulley mounted on said support structure, a driving belt passing around said pulleys, an arm pivoted on said support structure, an idler pulley mounted on said arm normally pressing against a reach of said belt to tension said belt about said pulleys, a supporting arm pivoted on said support structure, a shaft and guide roll mounted on said supporting arm, said guide roll normally pressing against said fabric between said supply and said pinch rolls and movable toward and away from said fabric, and a link pivotally connected at each end to each of said arms whereby said guide roll moves said idler pulley in a direction away from said reach of said belt to relax the tension in said belt whenever the feeding speed of the fabric in contact with the guide roll is slower than its delivery speed from said pinch rolls.

2. An apparatus for delivering and controlling the tension and speed of welded wire fabric drawn from a supply thereof comprising a pair of pinch rolls between which said fabric is delivered and by means of which said fabric is drawn from said supply, a support structure, an axle for one of said rolls journalled in said support structure, a driven pulley mounted on said axle, a driving shaft and pulley also mounted on said support structure, a driving belt passing around said pulleys, said belt extending rearwardly from said pinch rolls and toward said fabric supply, an arm pivoted on said support structure, an idler pulley mounted on said arm and resting on a portion of said belt extending between said pulleys, a pair of pivoted supporting arms extending from said support structure, a vertically displaceable shaft and guide roll carried by said supporting arms, said guide roll resting on said fabric between said supply and said pinch rolls, and a link pivotally connected at one end to said first named arm and at the other end to said guide roll shaft, whereby said guide roll lifts the idler pulley to relax the tension in the driving belt whenever the feeding speed of the fabric in contact with the guide roll is slower than its delivery speed from said pinch rolls.

WILLIAM S. SOUTHWICK.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
Re. 12,656	Cocker of 837,797	May 28, 1907
755,006	Hoxie	Mar. 22, 1904
963,616	Mirfield	July 5, 1910
1,661,156	Armstrong	Mar. 6, 1928
1,854,604	Steinmann	Apr. 19, 1932
1,896,802	Richter	Feb. 7, 1933
1,904,870	Laycock	Apr. 18, 1933
2,082,388	Getz	June 1, 1937
2,171,741	Cohn	Sept. 5, 1939
2,245,584	Harter	June 17, 1941
2,487,392	Southwick	Nov. 8, 1949

FOREIGN PATENTS

Number	Country	Date
426,833	France	May 13, 1911