# United States Patent

[11] 3,588,066


[72] Inventors **Kurt Reinfeld;**
**Emmanuel V. Gouye, Pittsburgh, Pa.**



[21] Appl. No. **812,979**
[22] Filed **Apr. 3, 1969**
[45] Patented **June 28, 1971**
[73] Assignee **Koppers Company, Inc.**


[54] **APPARATUS FOR CUTTING A CONTINUOUSLY CAST METAL STRAND**
**15 Claims, 7 Drawing Figs.**


[52] **U.S. Cl.** ..... **266/23,** 164/263
[51] **Int. Cl.** ..... **B23k 7/00,** B22d 11/12
[50] **Field of Search** ..... 164/263, 269; 266/23 (K), 23 (M); 83/319, 320



[56] **References Cited**

UNITED STATES PATENTS

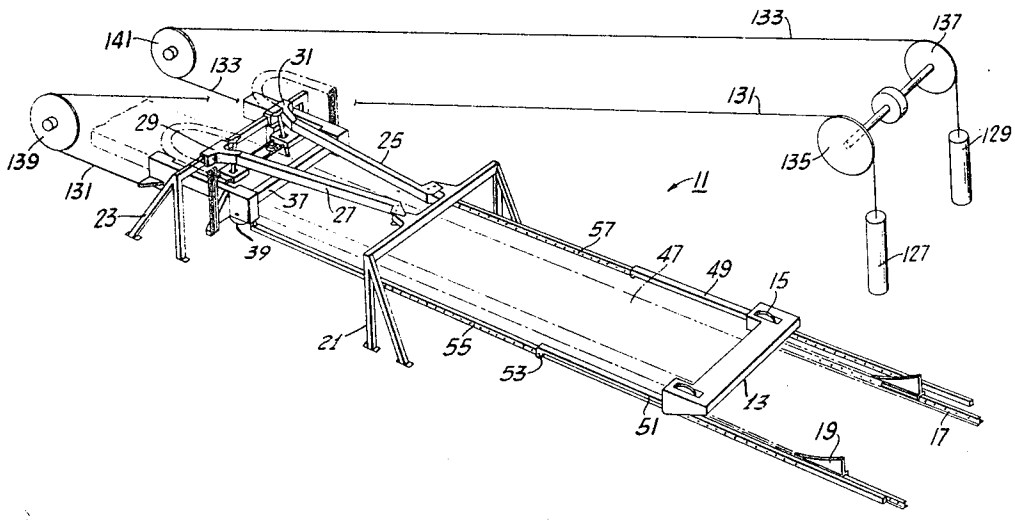
| | | | |
|---|---|---|---|
| 3,382,112 | 5/1968 | Oxley et al. | 266/23X |
| 3,462,134 | 8/1969 | Michelson | 164/263X |
| 3,497,195 | 2/1970 | Kalkhof | 164/263X |
| 3,511,489 | 5/1970 | Field | 266/23 |



*Primary Examiner*—Robert D. Baldwin
*Attorneys*—Sherman H. Barber and Olin E. Williams



**ABSTRACT:** The invention comprises a support that moves along with a continuous cast strand and that supports two flame cutting torches. The torches move transversely to the cast strand along paths prescribed by established guide rods, and after a slab is severed from the cast strand the apparatus returns to its initial position. The apparatus is adapted to crop the head end from strands as well.

PATENTED JUN 28 1971

3,588,066

SHEET 1 OF 7

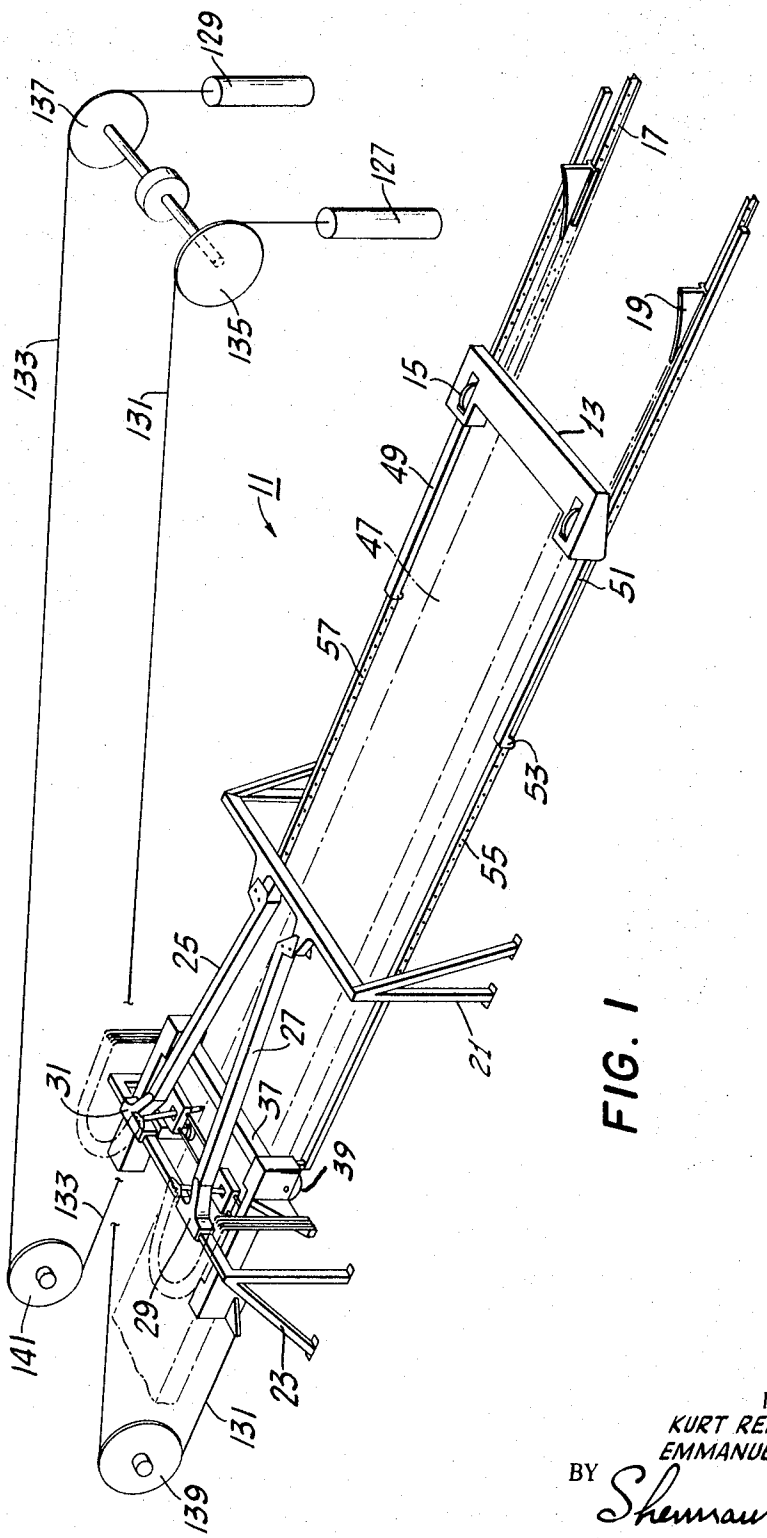



FIG. 1

INVENTORS
KURT REINFELD &
EMMANUEL V. GOUYE
BY Sherman H. Baker
Attorney

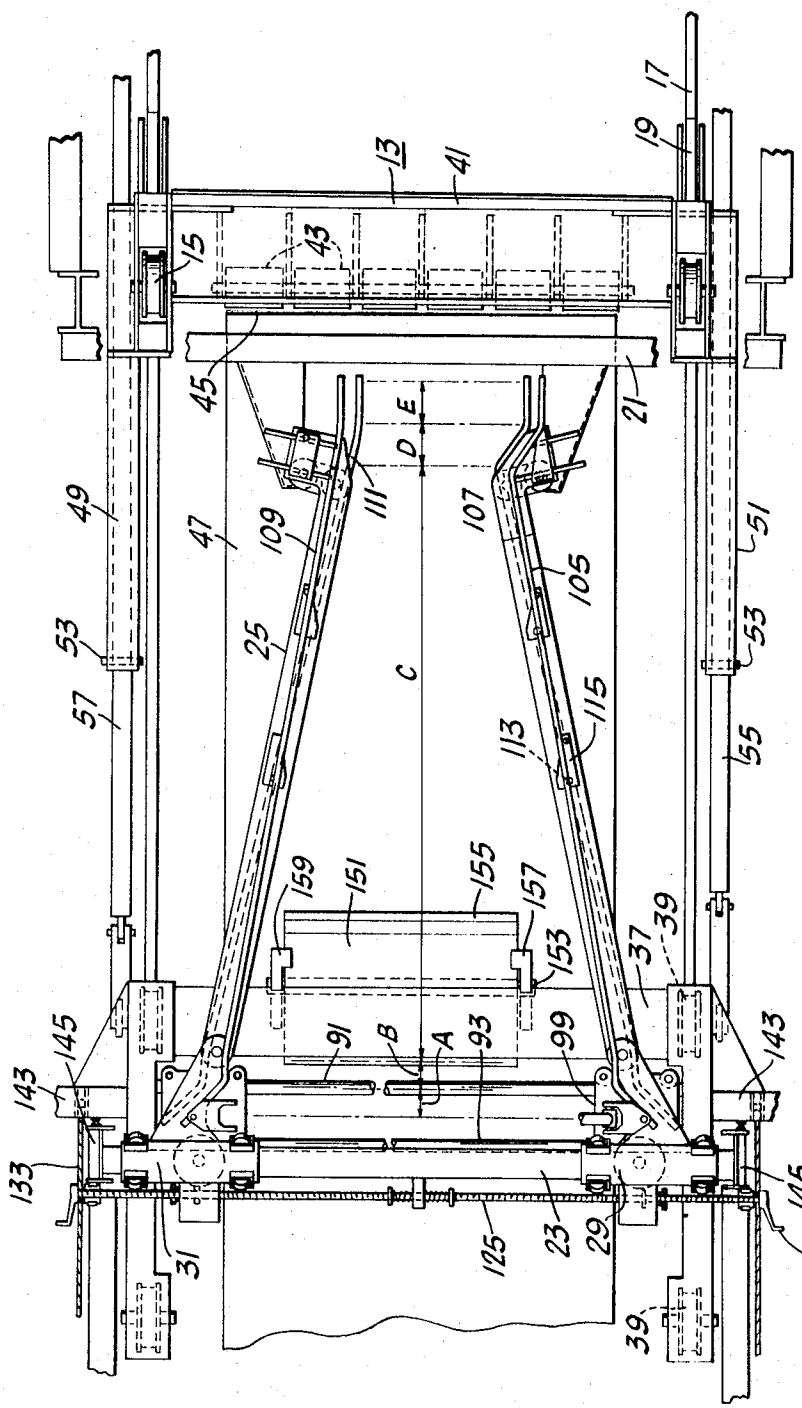



FIG. 2

INVENTORS
KURT REINFELD &
EMMANUEL V. GOUYE

BY Sherman M. Baker
Attorney

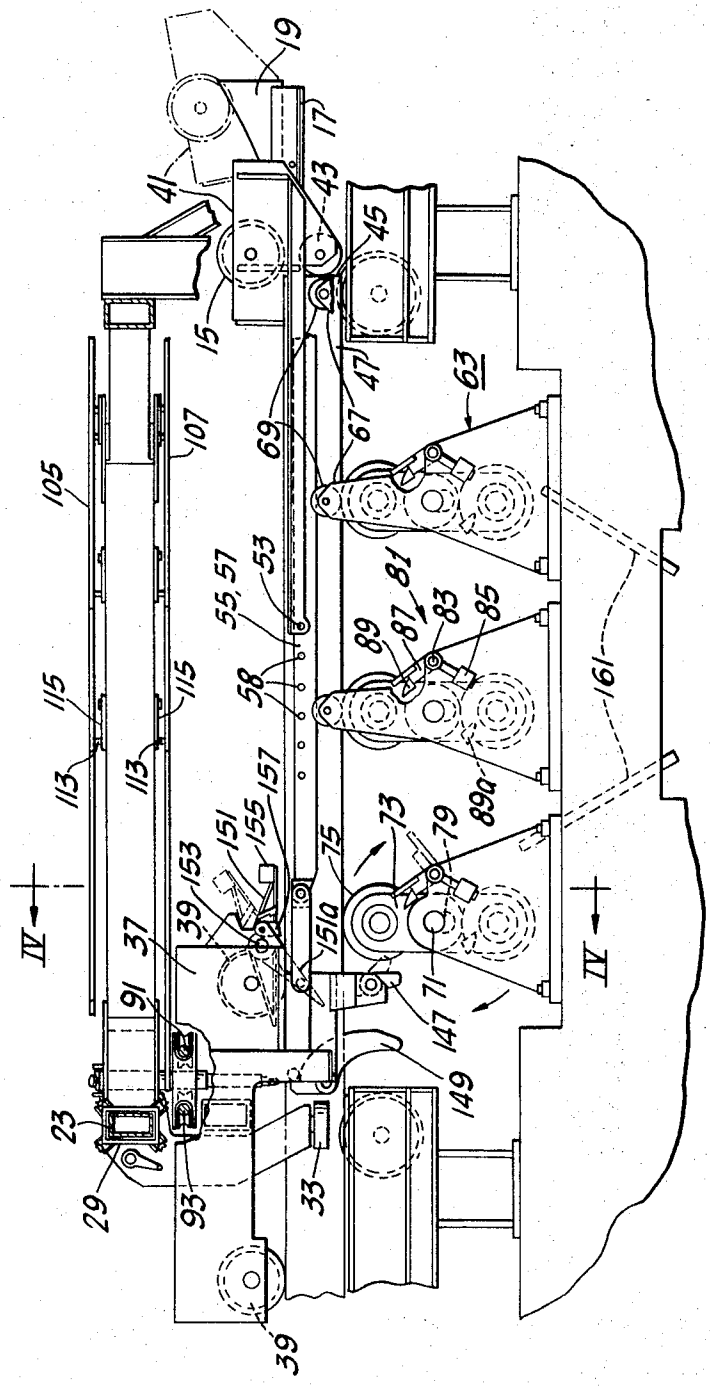



FIG. 3

INVENTORS
KURT REINFELD &
EMMANUEL V. GOUYE
BY
Sherman A. Barker
Attorney

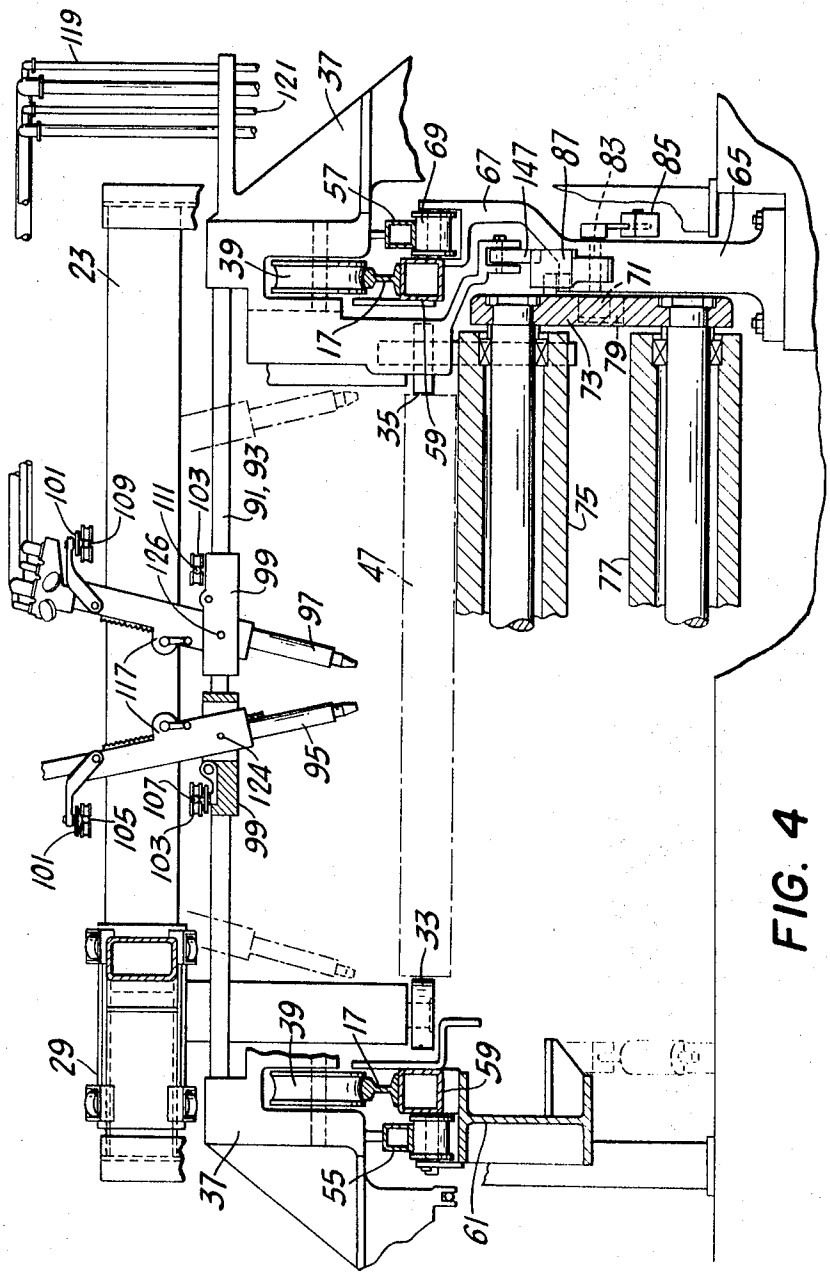



FIG. 4

INVENTORS
KURT REINFELD &
EMMANUEL V. GOUYE
BY Sherman H. Barker
Attorney

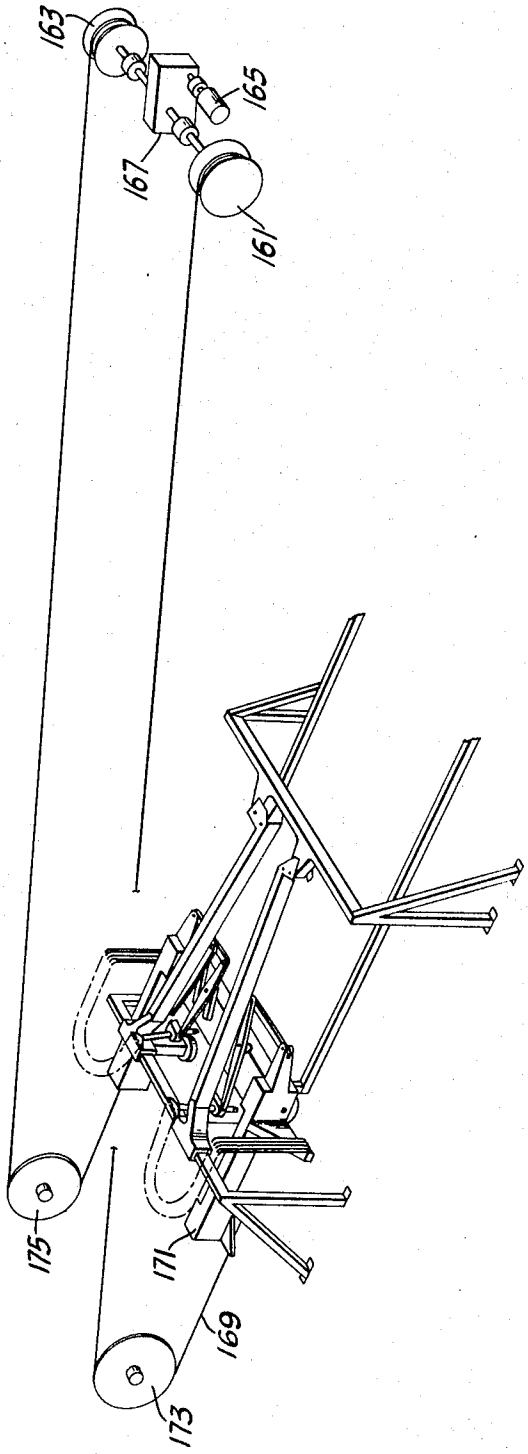



FIG. 5

INVENTORS
KURT REINFELD &
EMMANUEL V. GOUYE
BY Sherman H. Barker
Attorney

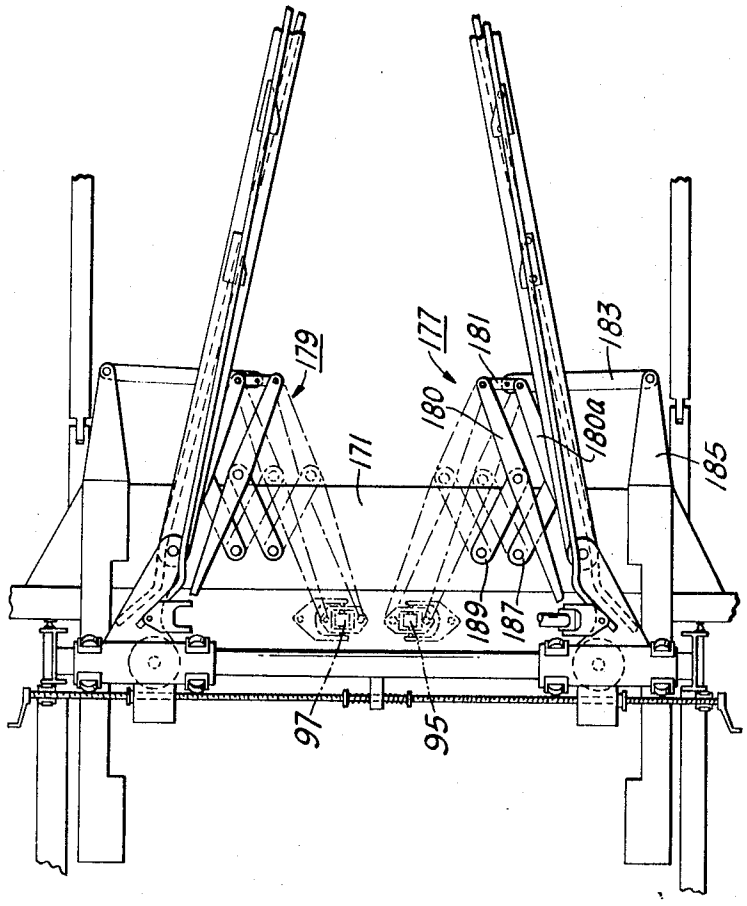



FIG. 6

INVENTORS
KURT REINFELD
EMMANUEL V. GOUYE

BY Shemanski & Barker
Attorney

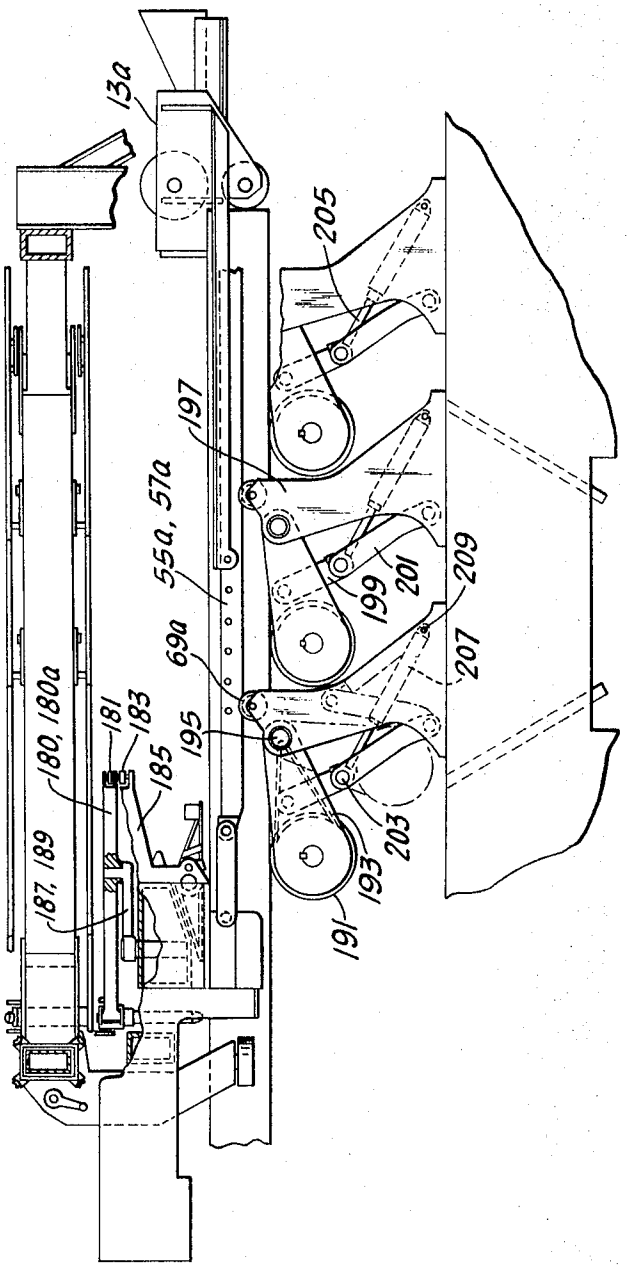



FIG. 7

INVENTORS
KURT REINFELD &
EMMANUEL V. GOUYE
BY
Sherman H. Barber
Attorney

# APPARATUS FOR CUTTING A CONTINUOUSLY CAST METAL STRAND

## BACKGROUND OF THE INVENTION

In continuous casting installations wherein the cast strand is curved toward the horizontal plane, the cast strand usually passes through a straightening device and then passes a cutting off station at which the strand is severed either with a flying saw or with an oxyacetylene burning torch.

The cutting mechanism must be moved along a path parallel to the path traversed by the cast strand, and the cutting mechanism must move at the same speed at which the strand is moving. Then, after cutting a slab or billet of desired length from the continuous cast strand, the cutting mechanism returns to its original starting position. The billet or slab moves along a runout table toward a stacking device.

Various types of apparatus are available in the prior art to cut a continuous cast strand into billets of desired length, where the cross section of the billet is square and is not overly large. However, completely satisfactory apparatus for cutting a slab from a continuous cast strand is not yet available in the prior art, principally because a slab is so much wider than a billet it requires more than one flame cutting torch to sever a slab from a wide continuous cast strand. Fully satisfactory mechanism for moving two flame cutting torches across a wide continuous strand has not been available heretofore in the prior art.

How the apparatus of the present invention meets the need for a more satisfactory slab cutting apparatus will be apparent to those skilled in the art from the following description of one embodiment and a modification of the embodiment of the present invention.

## SUMMARY OF THE INVENTION

Apparatus for cutting slabs from a continuous cast strand includes fixed frames that support cutting torch guides. Torches mounted to a carriage that is motivated by the moving strand are guided by the torch guides and cut a slab from a strand as the carriage moves along with the strand. Strand supporting rollers automatically retract as the torches approach them, and move back into supporting location after the torches pass by.

For a further understanding of the present invention and for advantages and features thereof, reference may be made to the following description taken in conjunction with the accompanying drawings which show for the purpose of exemplification embodiments of the invention.

## BRIEF DESCRIPTION OF THE DRAWINGS

The drawings illustrate one embodiment and a modification of the embodiment of the invention wherein:

FIG. 1 is a schematic perspective view of apparatus in accordance with the invention;

FIG. 2 is a plan view of the apparatus of FIG. 1;

FIG. 3 is a side elevational view of the apparatus of FIG. 1 with some portions shown in section;

FIG. 4 is a sectional view along line IV–IV of FIG. 3;

FIG. 5 is a schematic perspective view of a modification of the apparatus of FIG. 1;

FIG. 6 is a plan view of a portion of the apparatus of FIG. 5; and

FIG. 7 is a side elevational view of the apparatus of FIG. 6.

## DETAILED DESCRIPTION

Referring to FIG. 1, cutting apparatus 11 in accordance with the invention includes: a yoke 13 that has rollers 15 coacting with spaced apart parallel rails 17 to which are mounted disengaging cams 19; a pair of spaced apart frames 21, 23 which straddle the parallel rails 17; a pair of beams 25, 27 that are pivotally mounted at the other end to laterally adjustable slab feeler blocks 29, 31 supporting slab side feeler rollers 33, 35; and a torch carriage frame 37 having rollers 39 that cooperate with the side rails 17.



The yoke 13 comprises a transversely extending box beam type structure 41 that supports the side rollers 15, and that also supports a plurality of horizontally arranged other rollers 43. These rollers 43 abut the leading edge 45 of a continuous cast strand 47. The rollers 43, as shown in FIG. 3, are disposed below the side rails 17. To the ends of the transversely extending box beam type structure 41, there are fixed elongate rearwardly extending side connecting arms 49, 51 that are pin connected, as at 53, to elongate spaced apart parallel bars 55, 57. The bars 55, 57 are spaced outwardly from and parallel to the rails 17, as shown in FIGS. 1 and 4, and are perforated, as at 58, to allow for relocating the pin 53 as desired.

From FIGS. 3 and 4, it will be noted that the conventional runout table rollers supporting structure, which supports the rails 17 and includes a hollow elongate bar 59 and an I-beam 61, is discontinuous in way of the apparatus 11. The structure supporting the apparatus 11 includes three opposed pairs of roll stands 63. Of course, in many installations a larger number or a lesser number of roll stands may be used if desired.

Each roll stand 63 includes a vertical frame 65 which has an outwardly and upwardly projecting support arm 67 that carries the rails 17 and hollow bar 59, as well as a roller 69 on which the bar 55 rests. Each frame 65 is bolted to a suitable structure as shown in FIG. 3.

On the opposed inner sides of the frame 65 there is pivotally mounted, as at 71, an elongate tie member 73 to the end portions of which are journaled cutting table support rolls 75, 77. The elongate tie member 73 has an oval hole 79 in which the pivot pin 71 acts, for a purpose that will be described hereinafter.

Associated with each roll stand 63 and with the upper roller of the pair of rollers that are mounted to the tie member 73, is a latch 81 that includes a horizontal shaft 83, a counterweight 85, and a latch dog 87 shaped about as shown in FIG. 3. Stops 89 are fixed to the tie member 73 about where shown in FIG. 3, and the upper stop 89, engages the latch 81 to maintain the roller 75, for example, in the vertical position; roller 77 is then maintained in the lower position.

Referring again to FIGS. 2 and 3, the torch carriage frame 37 supports a pair of transversely extending spaced apart rods 91, 93 on which a pair of burning torches of a known type, such as oxyacetylene torches 95, 97, travel. Each torch has a roller carriage 99 that coacts with a pair of the rods 91, 93.

The torches 95, 97 also have a pair of other roller carriages 101 and 103 (FIG. 4). The roller carriage 101 of torch 95 coacts with a cam rod 105 that is mounted to the upper surface of the adjustably positionable beam 27, and the roller carriage 103 of torch 95 coacts with a cam rod 107 mounted to the lower surface of the adjustably positionable beam 27. Likewise, the roller carriage 101 of torch 97 coacts with a cam rod 109 that is mounted to the upper surface of the adjustably positionable beam 25, and the roller carriage 103 of torch 97 coacts with a cam rod 111 that is mounted to the lower surface of the beam 25. The cam rods 105, 107, 109, 111 have the general shape as shown in FIG. 2, and are supported by vertical members 113 that are connected to pivotable plates 115 mounted to the beams 25, 27.

The apparatus of the invention is operated in the following manner.

Initially, the yoke 13 is located from the transverse centerline of the torches 95, 97 a distance that is equal to the length of the slab that is to be cut from the continuous cast strand 47. The pin 53 is then inserted in an appropriate hole 58 in the bars 55, 57 thereby fixing the yoke 13 in position.

Disengaging cams 19 are then located and pinned to the rails 17 at a distance from the yoke 13 that is slightly greater than the distance travelled by the yoke during the time it takes the torches to cut the slab.

The cam rods 105, 107 and 109, 111 are then set in position, by pivoting and fixing the plates 115, to give the torches the desired transverse speed and motion; it will be observed that the upper cam rods 105, 109 cross over the lower cam rods 107, 111, as shown in FIG. 2, which provides for a pivoting motion of the torches in a vertical plane transverse to the cast strand 47.

The distance of the torch tip from the top of the slab is preset by means of an adjusting rack and pinion 117 that is furnished with the torch. Then, the torch cooling water and the carriage cooling water is turned on so that the water circulates through conduits 119, 121, as suggested in FIG. 4. Thereafter, the torch fuel is ignited at the torch tip to maintain a standby flame that is about 6 inches long.

After the leading edge 45 of the continuous strand 47 passes the side rollers 33, 35, they are moved laterally toward the strand by turning a crank 123 fixed to a right and left-hand threaded Saginaw screw 125, until the side rollers 33, 35 contact the sides of the strand. The lateral movement of the side rollers 33, 35 also moves the feeler blocks 29, 31, and the pivotally attached ends of the beams 25, 27 toward each other.

The leading edge 45 of the continuous cast strand 47 advances from left to right, as viewed in FIG. 2, and abuts the rollers 43, as suggested in FIGS. 2 and 3. Further left to right advancement of the cast strand 47 moves the yoke 13 and the torch carriage frame 37 in a left to right direction, since the yoke and the torch carriage frame are interconnected by means of the side arms 49, 51 and the bars 55, 57.

The torches 95, 97 are initially positioned where shown in FIG. 4 by the dotted outline. That is, the torches are disposed in a downward and outward direction away from the cast strand 47. But, as the torch carriage frame 37 advances from left to right in FIG. 2, the torches 95, 97 move toward each other and they pivot about the horizontal support axes 124 and 126 respectively (FIG. 4). Since the torches 95, 97 are cooperative with their respective cam rods 105, 107 and 109, 111, the torches follow the path determined by these cam rods.

As the torches travel longitudinally a first distance A (FIG. 2) they also move laterally so that the torch tips are adjacent the lateral edges of the cast strand. During the time the torches move through the distance A, the preheat fuel valve (not shown) of each torch is fully opened either manually or automatically.

As the torches travel longitudinally a second distance B (FIG. 2), the preheat flames are maintained at the edges of the cast strand for preheating, and the cutting oxygen valve (not shown) is opened either manually or automatically.

During the next interval of travel, C, the torches cut the continuous cast strand almost across its width. But, during the next interval of longitudinal travel, D, torch 95 is moved outwardly due to the sharp change in direction of the cam rods 105, 107 (FIG. 2), and automatically the cutting flame is reduced to the standby flame mentioned previously. The torch 97, however, continues to cut the strand beyond the centerline, since there is no abrupt change in the shape of the cam rods 109, 111. There is provided, then an additional overtravel length, E, on the cam rods 105, 107 and 109, 111, extending beyond the distance D, to insure that the single torch 97 cuts through the middle portion of the cast strand and completely severs a slab from the cast strand.

When the torches travel through the distance E, which is the overtravel distance mentioned previously, the cutting flame of torch 97 is automatically reduced to a standby flame. At the same time, the yoke is disengaged from the slab when the rollers 15 ride up the arcuate surface of the cams 19 to the position shown in phantom outline FIG. 3. In such a situation, the rollers 45 are raised high enough so that the slab can pass beneath them.

Just as soon as the torches have completely cut the cast strand and after the yoke has become disengaged from the slab, the slab is moved rapidly toward the right and away from the cast end to prevent any possibility of the hot strand being rewelded to the slab.

The yoke, arms, and torch carriage frame then return to the initial position under the influence of a set of counterweights 127, 129 acting on the carriage frame through wire cables 131, 133 and sheaves 135, 137, 139, and 141 (FIG. 1). In some applications, if preferred, the wire rope and sheaves may be replaced by chains and sprockets, or any other suitable mechanism may be used to accomplish the same purpose. The rollers 43, of course, coact with the top surface of the slab during the return travel of the yoke.

When the torch carriage approaches the initial position, an outwardly projecting member 143 on each side engages a buffer cylinder piston 145 which absorbs the momentum of the returning mechanism and which gradually slows and stops the longitudinal motion of the mechanism.

Referring again to FIG. 3, it will be noted that, as the torch carriage moves from left to right during cutting of the cast strand, the first dogs 147, pivotally mounted to the underside of the carriage at the outer ends thereof, engage the upwardly projecting portion of the latch 87, and pivot the latch clockwise. Other second dogs 149, likewise pivotally mounted to the underside of the carriage at the outer ends thereof, engage the roller 75 and pivot the tie member 73 and roller 75 clockwise.

Because the pivot pin 71 cooperates with the oval hole 79, the center of gravity of the tie member and the rollers is always below the centerline axis of the pin 71. Hence, when the dogs 149 pivot the tie members 71, they will continue to pivot due to the momentum generated by the second dogs 149, and the bottom roller 77 will then be disposed at the top and the former top roller 75 will be at the bottom. While the tie member and roller have been pivoting, the torches 95, 97 will have moved past the rollers 75, 77 without damaging either one of them.

When the roller 77 reaches the top position, it is prevented from continuing to pivot by a stop 89*a* that engages the latch 87 which has returned to the engaging position due to the effect of its counterweight 85.

In like manner the dogs 147 and 149 actuate the latches and rollers of the other roll stands 63 so that the torches 95, 97 do not damage these rollers when they move past them.

It is customary in continuous casting operations to separate the starting bar from a head end portion that is integrally formed with the cast strand. Heretofore, it has been necessary to manually flame cut or crop the starting bar head end portion from the strand. However, the apparatus of the invention is readily adapted to accomplish this automatically in the following manner.

At the front end of the torch carriage 37, there is a front cropping stop 151, which is pivotally attached to the carriage at 153. The cropping stop is provided with a counterweight 155, as shown in FIGS. 2 and 3, and also includes two side latches 157, 159, to maintain and hold the stop 151 in the operative down position.

When it is desired to crop the head end of the cast strand, the front cropping stop 151 is pivoted downwardly to the position 151*a* in FIG. 3. Then, the stop 151 is held in this down position by the side latches 157, 159.

The head end of the cast strand 47, in moving from left to right in FIG. 3 abuts the depressed cropping stop 151, and the torch carriage arms and yoke move in the same direction along the cast strand as described previously. Immediately, the torches commence the cutting cycle described previously, and the torches crop the head end from the strand.

The cropped head end gravitates between the roll stands into a chute 161 provided below the roll stands. The cropped head end gravitates into a car or other device and is thereafter removed to another location.

Immediately the head end has been cropped, the front cropping stop 151 pivots clockwise to its original position and the counterweights 127, 129 return the torch carriage, arms, and yoke to the initial position.

FIGS. 5—8 illustrate a modification of the apparatus of FIGS. 1—4. Because the modified apparatus is so similar to the apparatus described previously herein it suffices to describe only the differences in the apparatus of FIGS. 5—8. The principal modifications reside in: a torch carriage return mechanism; a support mechanism for the torches; and a slab support roller system.

Referring to FIG. 5, the torch carriage return mechanism comprises a pair of hoisting drums 161, 163 which are driven by an electric motor 165 acting through an appropriate speed reducer 167. The speed reducer 167, the motor 165, and the hoisting drum 161, 163 are suitably mounted to support structure available nearby, but not shown. One end of such wire rope cable 169 is fastened to the torch carriage frame 171 and the cables pass around sheaves 173, 175 that are similar to the sheaves 139, 141 of FIG. 1. The other end of the wire rope cables 169 is looped around the hoisting drums 161 and 163.

The torch support mechanism includes pantographic mechanisms 177 and 179, as shown in FIGS. 6 and 7. Each torch is similarly supported so that a description of one torch support mechanism suffices for both.

The pantographic torch supporting mechanism 177 includes a pair of elongate parallel arms 180, 180*a* that are pivotally connected to the torches 95, 97 and that are pivotally connected to a short connecting link 181. The connecting link 181 is pivotally mounted to one end of an elongate member 183 that is pivotally connected at the other end to a fixed outwardly projecting portion 185 of the torch carriage frame 171. Each one of the elongate arms 180, 180*a* is pivotally mounted at about the midlength point of each arm (FIG. 6) to other parallel pivotable links 187, 189 that are mounted to the torch carriage frame, about where shown in FIGS. 6 and 7.

Each one of the slab supporting rollers, shown in FIG. 7, includes a slab roller 191 that is journaled at each end in pivotably supporting arms 193. The arms 193 are pivoted, as at 195, to upright fixed support frames 197. Each one of the fixed support frames 197 also supports rollers 69*a* on which the bars 55*a*, 57*a* of the yoke 13*a* rest.

To each supporting arm 193 there is pivotally connected a toggle assembly comprised of two interconnected links 199, 201 which are pivotally connected together, as at 203, and to a piston rod 205 of a cylinder piston assembly 207. The cylinder is pivotally mounted to the support frame 197, as at 209. Each supporting roller 191 is independently driven by a small electric motor and gear reducer, or some other suitable source of rotary power, such as a motor and chain drive and gears, which are not shown.

The operation of the modified apparatus of FIGS. 5—7 is substantially the same as the operation of the apparatus of FIGS. 1—4 described herein, except that the slab support rollers 191 are pivotally lowered, to prevent damage to them when the torches pass over the rollers, by actuating the cylinder piston 207. Of course, control of the actuating mechanism for the cylinder piston 207 may be automatic, as by remote control switches located on the beams 27, 29, or manual. Then, when the torches approach the first roll stand, a first remote control switch is actuated whereby the cylinder piston 207 retracts the toggle linkage and the support roller 191 pivotally lowers to the position shown by the dash-dot outline in FIG. 7. After the torches and slab have moved through a preselected distance, which distance is sufficient to move the torches past the roll stand, another switch may be actuated to motivate the cylinder piston to pivotally raise the roller to its initial supporting position.

Since the torches are guided by cam rods like those shown in FIG. 2, they move substantially the same way. The pantograph mechanism attached to each torch provides support for each torch.

After the torches have cut a slab from the cast strand, and after the yoke has been disengaged from the end of the slab in the manner described previously, the hoisting motor 165, reducing gear 167, and hoisting drums 161, 163 may be automatically actuated to return the torch carriage and yoke to its initial position.

Those skilled in the art will recognize many significant features and advantages of the apparatus of the invention among which are;

That the apparatus is mechanically self-operating to effect rapid and efficient cutting of slabs from continuous cast strands;

That the apparatus is mechanically self-operating to trim and crop the head end of a continuous cast strand;

That the apparatus is readily adjustable to cut slabs from strands of different widths and such adjustment may be made manually or automatically.

We claim:

1. In a continuous casting machine wherein the cast strand advances in a substantially horizontal plane, improved apparatus for cutting individual lengths from said strand comprising:
   a. means for supporting said strand in said substantially horizontal plane;
   b. a pair of first and second spaced apart frames established in position straddling said strand supporting means and past which said strand advances;
   c. first means engageable with the advancing front end of said strand;
   d. a carriage movable along a path parallel to the path of said strand from an initial position to a second position;
   e. second means connecting said first means to said carriage;
   f. third means for maintaining said carriage movable along said path;
   g. a flame cutting torch movably mounted to said carriage;
   h. guide means mounted to said first and second frames and cooperative with said torches whereby said torches move laterally of said strand and toward each other as said carriage advances in the direction said strand moves, and cuts said strand;
   i. fourth means to disengage said first means from said strand after said torches have cut said strand; and
   j. fifth means to return said carriage and said first and second means to said initial position.

2. The invention of claim 1 wherein:
   a. said first means comprises
      i. a member extending transversely of said strand and having wheels at the side that are engageable with said third means, and
      ii. a surface that engages said strand.

3. The invention of claim 1 wherein:
   a. said second means includes linking means.

4. The invention of claim 1 wherein:
   a. said third means includes a pair of spaced apart rails arranged on opposite sides of said strand and disposed substantially parallel to the path traversed by said strand.

5. The invention of claim 1 wherein:
   a. said guide means includes
      i. at least two elongated members connecting together said first and second frames, and
      ii. a pair of spaced apart rods adjustably mounted to each of said elongate members, each said pair of rods coacting with one said torch to guide it.

6. The invention of claim 1 including:
   a. adjustable means engageable with said strand for locating said guide means and said torches adjacent the edge of said strand.

7. The invention of claim 6 wherein:
   a. said adjustable means includes
      i. two blocks slidable on the one of said frames that is nearer said initial position.

8. The invention of claim 7 including:
   a. a rotatable screw that coacts with said blocks for moving said blocks laterally of said strand.

9. The invention of claim 1 wherein:
   a. said strand supporting means includes a plurality of roll stands disposed between said frames and supporting said strand as it is being cut by said torches, each said roll stand comprising at least one roller;
   b. means for disengaging the rollers of each roll stand successively from said strand as said torches pass over said roller while cutting said strand; and
   c. means for reengaging said roller of each roll stand successively with said strand after said torches have moved away from said roller.

10. The invention of claim 9 wherein:

a. said roller is journaled to members that are mounted to each of said roll stands on pivots.

11. The invention of claim 10 wherein:

a. said members support a pair of rollers journaled thereto at locations on opposite sides of said pivot; and including

b. means to hold and maintain one of said pair of rollers in supporting contact with said strand;

c. means to pivot said member and move said one roller to a position where it is out of contact with said strand just before said carriage and the torches carried thereon pass over said roller while cutting said strand; and

d. means to pivot said member so that the other one of said rollers is brought into supporting relation to said strand after said carriage and torches have passed said roll stand.

12. The invention of claim 11 including:

a. latch means to hold and maintain said one or the other roller in supporting contact with said strand;

b. first means on said carriage to contact said latch and disengage it;

c. second means on said carriage engageable with the one roller in contact with said strand to pivot said member so that the other roller is brought into contact with said strand and said member is latched.

13. In a continuous casting machine wherein the cast strand advances in a substantially horizontal plane, improved apparatus for cutting individual lengths from said strand comprising:

a. a pair of first and second spaced apart frames established in position and past which said strand advances;

b. a member extending transversely of said strand and engageable with said strand;

c. a carriage movable along a path parallel to the path traversed by said strand from an initial position to a second position;

d. linking means connecting said transversely extending member to said carriage whereby when said transversely extending member engages said strand and moves along therewith said carriage also moves along with said strand;

e. a pair of spaced apart rails arranged on opposite sides of said strand and disposed substantially parallel to the path traversed by said strand, said carriage having means thereon that coact with said rails;

f. a first flame cutting torch movable mounted to said carriage;

g. a second flame cutting torch movably mounted to said carriage and disposed in a plane normal to said strand and containing said first flame cutting torch;

h. guide members connecting together said first and second frames having mounted thereon spaced apart rods adjustably mounted thereto, said rods cooperating with respective torches to move said torches laterally of said strand as said carriage advances in the direction said strand moves from said first position to said second position;

i. adjustable means engageable with said strand for locating said guide rods and said torches adjacent the edges of said strand;

j. means to disengage said transversely extending member from said strand after said torches have cut said strand in two;

k. means to return said carriage from said second position to said first position;

l. a plurality of roll stands disposed between said frames and supporting said strand as it is being cut by said torches, each said roll stand comprising at least one roller;

m. a member mounted to each roll stand that is pivotable about a horizontal axis and which contains journals for supporting each roll;

n. means to hold and maintain said roller in supporting contact with said strand;

o. means to pivot said member and move said roll to a position where it is out of contact with said strand just before said carriage and the torches carried thereon pass over said roller while cutting said strand; and

p. means to pivot said member so that said roller is brought into supporting contact with said strand after said carriage and torches have passed said roll stand.

14. The invention of claim 13 wherein:

a. said means to hold and maintain said roll in supporting contact with said strand includes a toggle mechanism and a fluid actuated piston-cylinder assembly thereto connected.

15. The invention of claim 13 including:

a. a second roller journally mounted to said member on the opposite side of said pivot;

b. latch means to hold and maintain said one or the other of said rollers in supporting contact with said strand;

c. first means on said carriage to contact said latch and disengage it just before said torches reach the position of said first roll stand; and

d. second means on said carriage engageable with the one roller in contact with said strand to pivot said member so that the other roller is brought into contact with said strand and said member is latched in position after said torches have passed the location of said first roll stand.