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[50] Field of Search..... 242/75.2,
56.2; 226/195

[56] References Cited			
UNITED STATES PATENTS			
1,544,320	6/1925	Hough.....	242/75.2X
3,046,823	7/1962	Cole.....	242/75.2X
3,386,679	6/1968	Foulon et al.....	226/195X

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[54] **DRAG WIPE**
5 Claims, 7 Drawing Figs.
[52] U.S. Cl..... 226/195
[51] Int. Cl..... B65h 23/08

ABSTRACT: A drag wipe which selectively varies the overall pressure applied on all the slit strips or mults and also the pressure on individual mults, with provision for receiving a loop from some of the mults in a looping pit. The drag wipe can open for insertion of the mults.

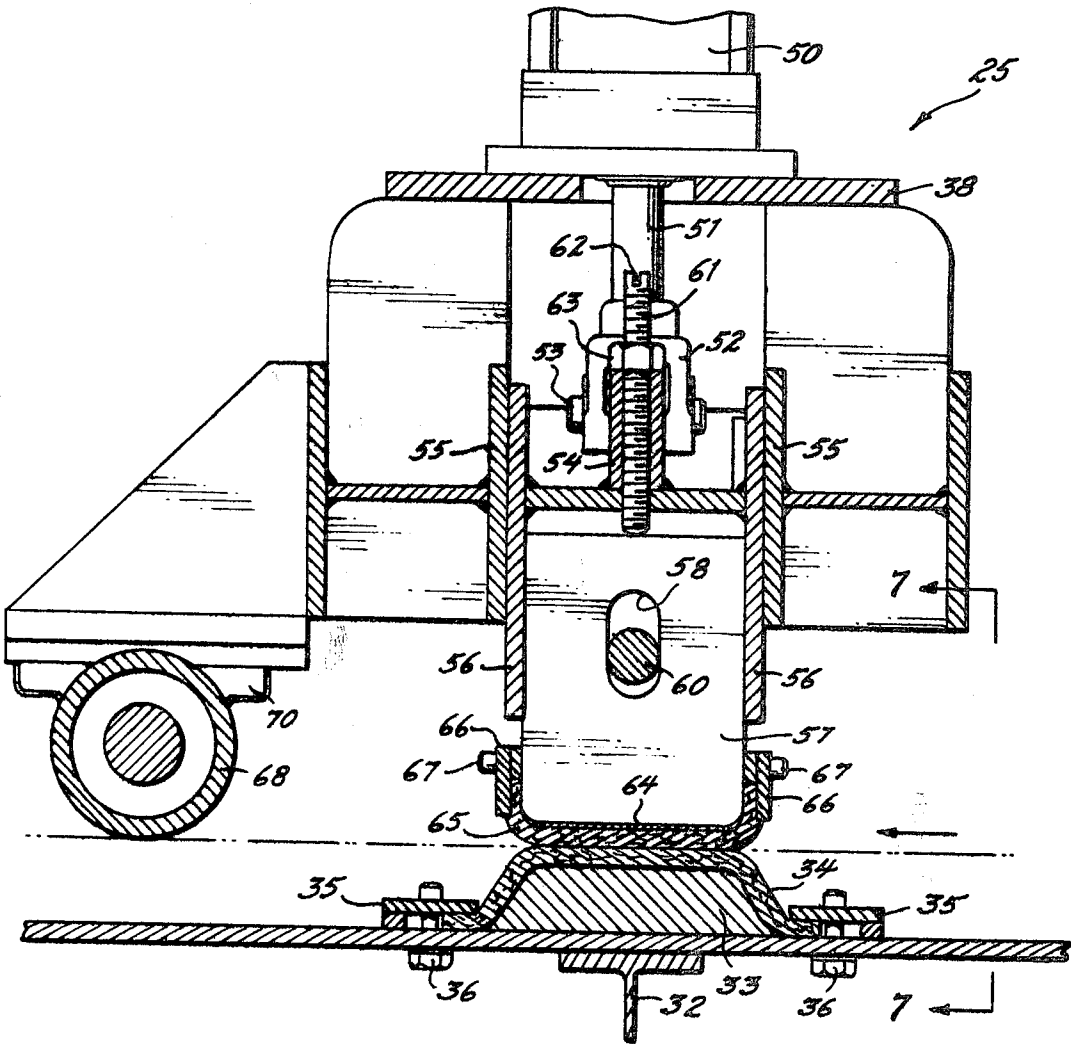


Fig. 3.

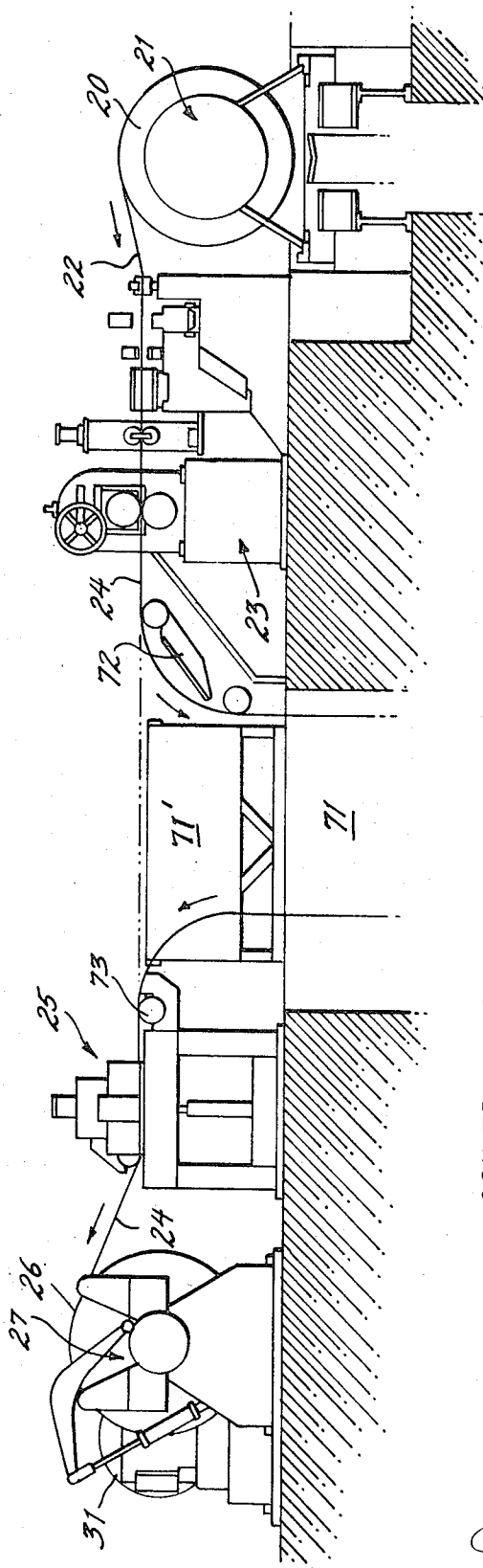
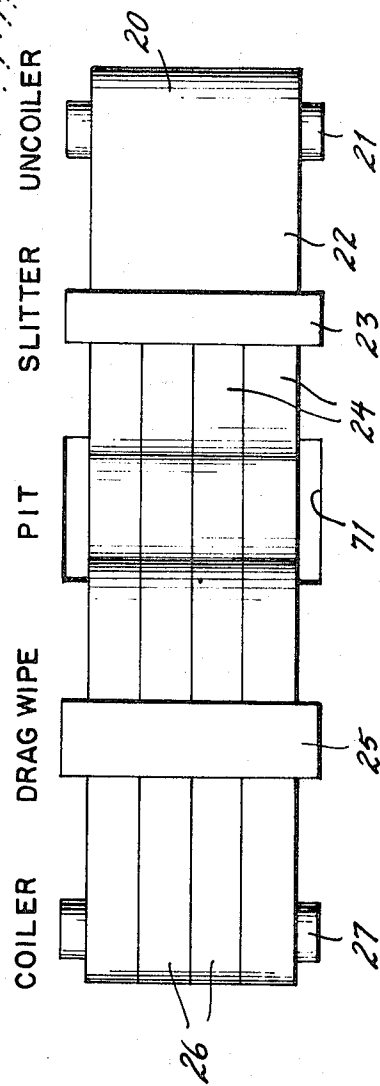


Fig. 1.



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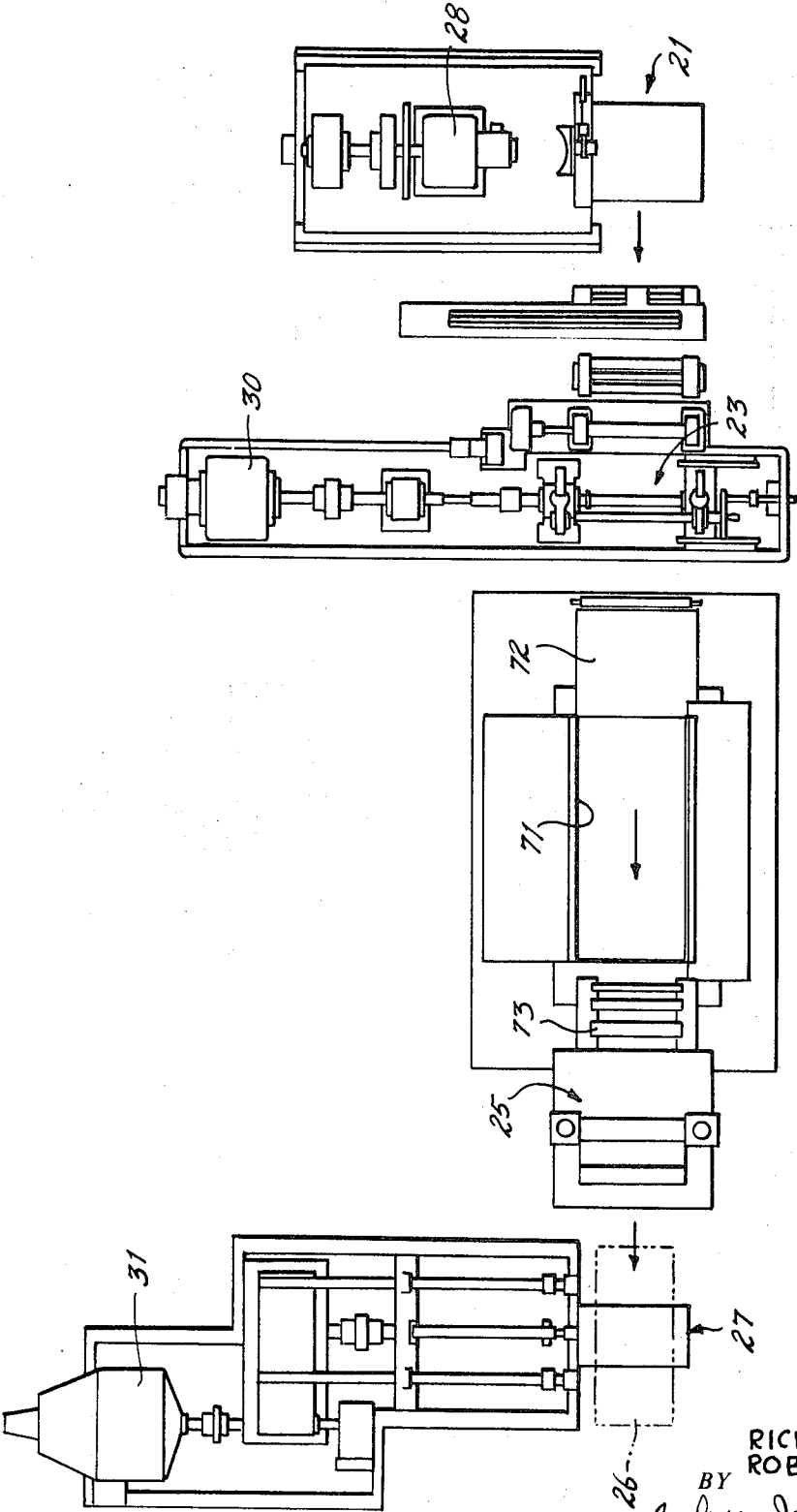


Fig. 2.

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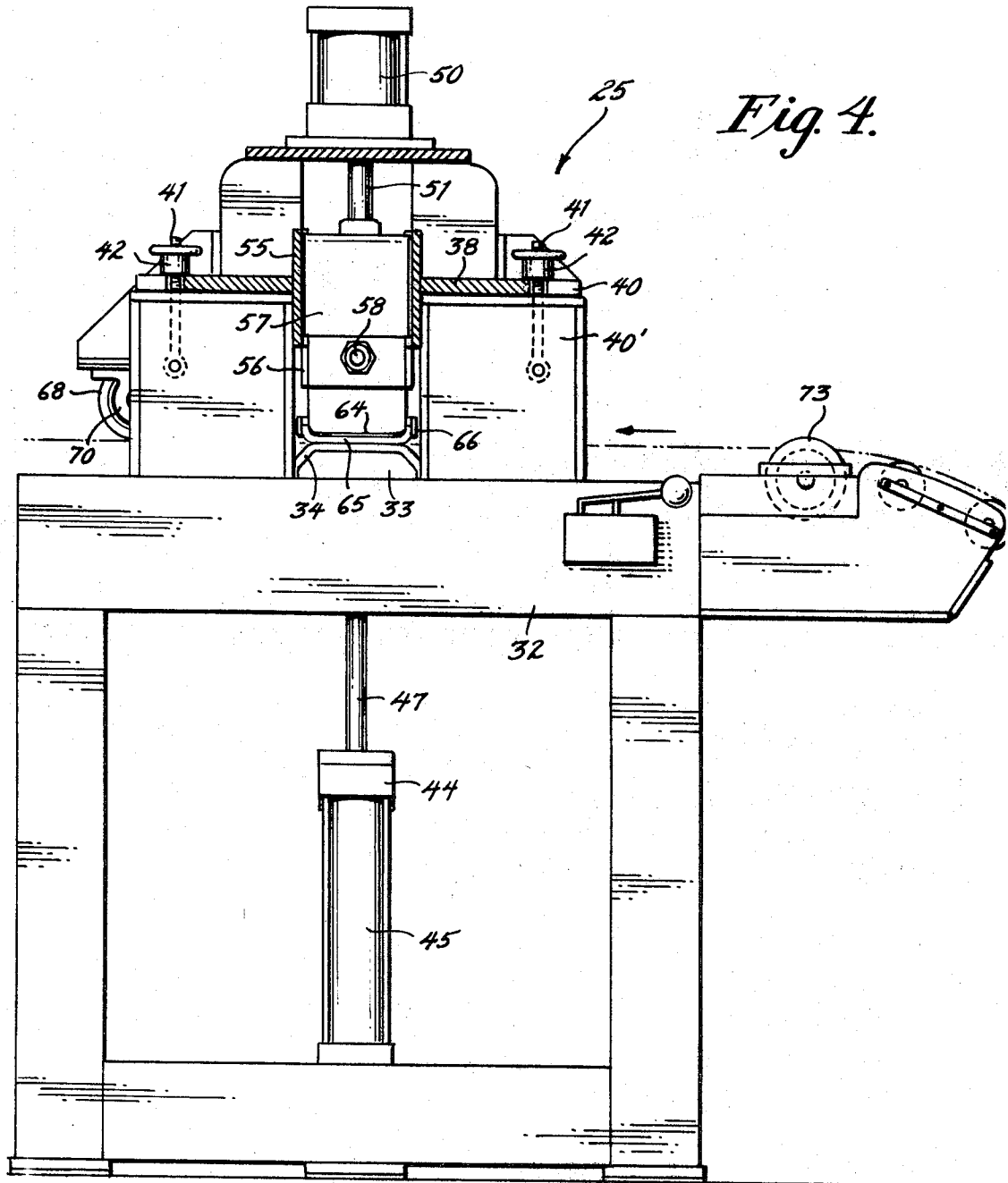


Fig. 4.

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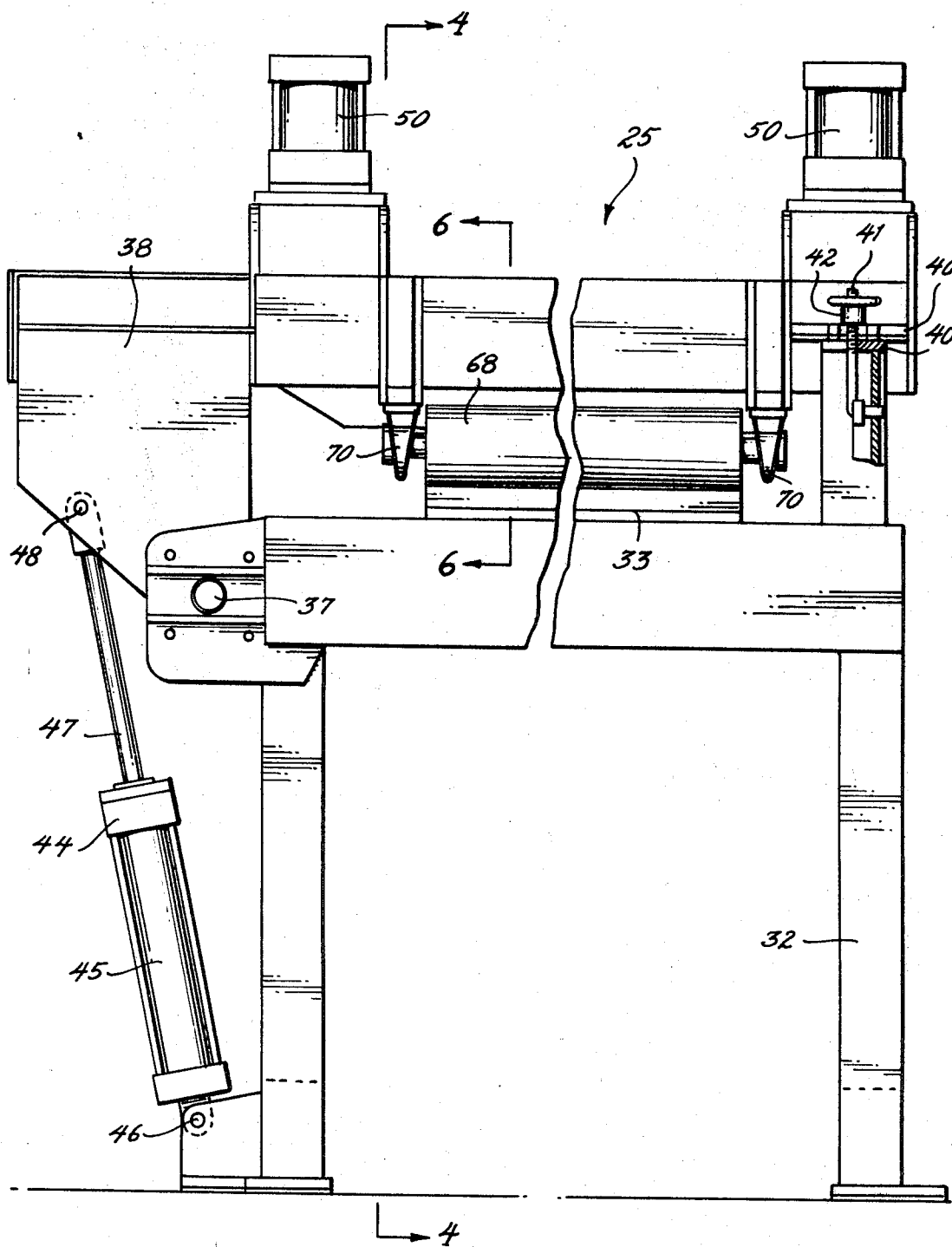
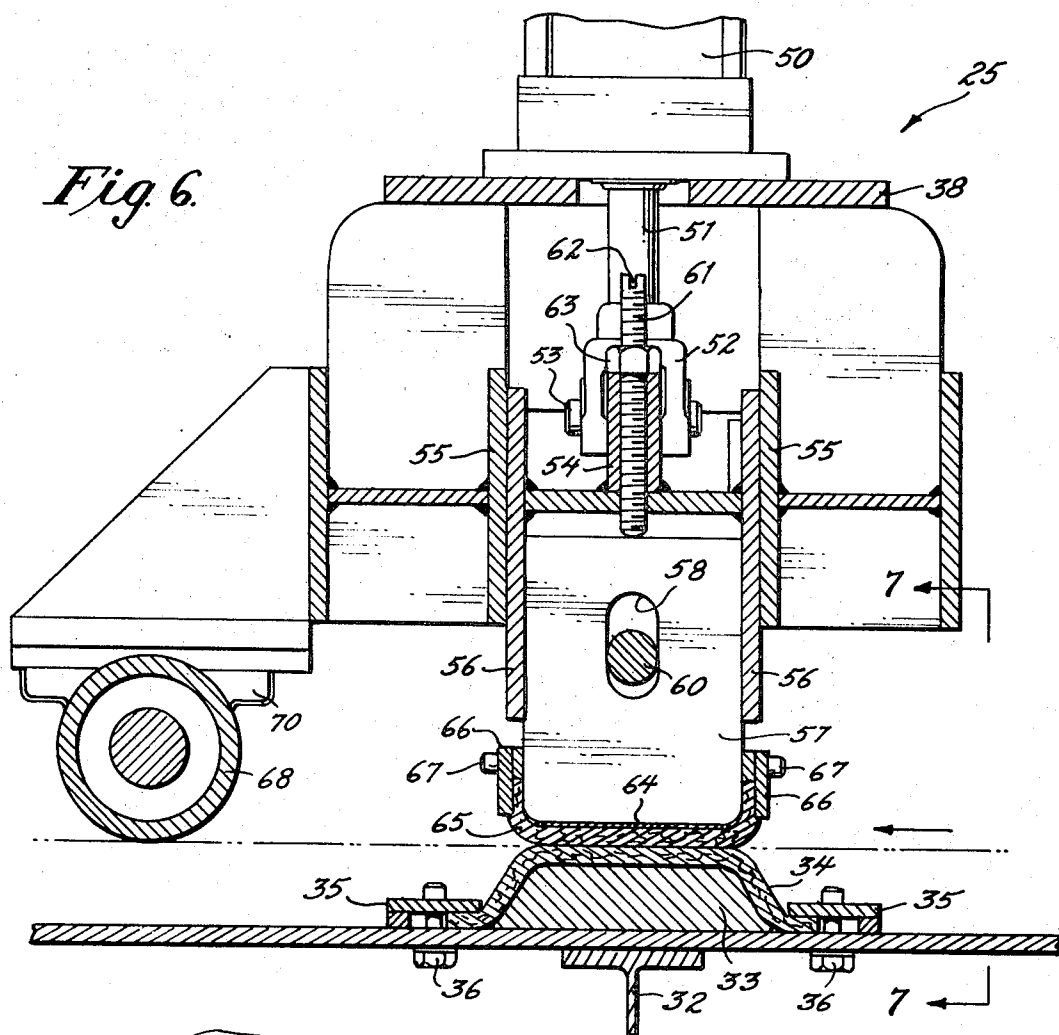
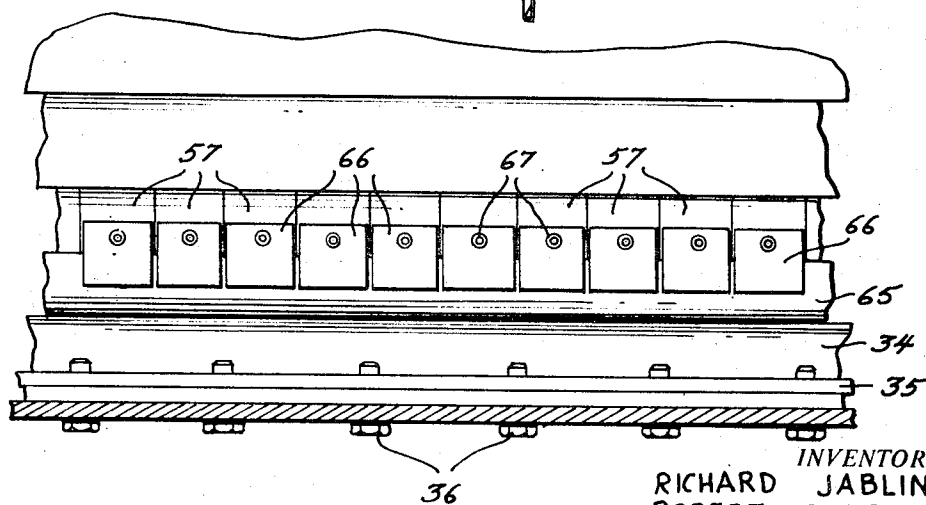


Fig. 5.

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DRAG WIPE

DISCLOSURE OF INVENTION

The present invention relates to a drag wipe which will assist in making uniform tight coils in winding various mults or strips of stock obtained from a slitter.

A purpose of the invention is to wind tight coils of the various mults coming from a slitter using a common mandrel, without inserting cardboards between the laps.

A further purpose is to permit adjustment of the frictional drag or tension on all the mults and also adjustment of the friction drag on individual mults so as to produce uniformly tight coils without the need for rewinding.

A further purpose is to adjust the pressure on individual pressure blocks in a drag wipe by screws individual to such pressure blocks.

A further purpose is to provide a resilient or spring strip running across all of the pressure blocks and distributing the individual adjustment pressure at the point where one pressure block adjoins another.

A further purpose is to provide a looping pit to receive loops formed from certain of the mults.

A further purpose is to permit opening of the upper mechanism of the drag wipe so as to insert fresh stock.

In the drawings we have chosen to illustrate one only of the numerous embodiments in which the invention may appear, selecting the forms shown from the standpoints of convenience in illustration, satisfactory operation, and clear demonstration of the principles involved.

FIG. 1 is a diagrammatic top plan view of the device of the invention.

FIG. 2 is a fragmentary top plan view of the equipment of the invention.

FIG. 3 is a fragmentary diagrammatic vertical section of the device of the invention, the section being taken to one side of the device through the base so as to show the device in elevation.

FIG. 4 is a side elevation of the drag wipe itself, partly shown in section on the line 4-4 of FIG. 5.

FIG. 5 is an end elevation of the drag wipe of the invention partly broken away to show the latch.

FIG. 6 is an enlarged section on the line 6-6 of FIG. 5.

FIG. 7 is an enlarged section on the line 7-7 of FIG. 6.

In the prior art, when strip or sheet from a rolling mill is to be slit as by a slitter into separate strips or so-called mults, difficulty has been encountered in winding these mults on a multiple coil winder which has a common spindle. The sheet or strip is relatively thin at its edges and relatively thick at the longitudinal middle, and therefore, unless precautions are taken, the coils will be of different diameters and wound at different peripheral speeds. To overcome this difficulty in the past it has been common practice to introduce cardboard spacers between the turns of the outer coils (remote from the longitudinal middle) so as to create by this means the same diameter of the coils.

The job of inserting the cardboard spacers manually is a very dangerous one which can lead to injury of personnel at the winder. Furthermore, users of the sheet or the strip coils object to the presence of the cardboard spacers because they cause trouble in stamping, and it has been the practice to rewind coils having cardboard spacers to eliminate them, in order to ship coils in which no spacers are present. The rewinding is troublesome and expensive.

We have discovered that it is possible to obtain tight coils for each of the mults coming from the slitter without the necessity for rewinding the coils to eliminate cardboard spacers.

In accordance with the invention, the mults from the slitter are led through a drag wipe in which the frictional drag or tension is regulated to apply the same frictional drag on the relatively thin mults toward the outer edges as on the relatively thick mults toward the longitudinal middle of the strip or sheet.

While it will be evident that the invention will normally be applied to strip or sheet which has been wound into a coil as it left the rolling mill and which is then uncoiled in order to go through the slitter, it will be evident that the principles of the invention can be applied to strip or sheet which reaches the slitter from any suitable source.

First considering the diagram in FIG. 1, a coil of steel strip 20 is there shown being uncoiled by an uncoiler 21 best seen in FIGS. 2 and 3, the work 22 passes to a slitter 23 which slits the work longitudinally into a multiple of mults 24, some of which are relatively thin toward the lateral edge and others of which are relatively thicker toward the longitudinal middle. From the slitter the mults pass through a drag wipe 25 according to the invention and after passing through the drag wipe the separate mults are wound into coils 26 on a recoiler or coiler 27.

Since the uncoiler 21, the slitter 23 and the recoiler 27 are all well known in the art, they will not be described in particular detail except to say that each has its drive mechanism 28, 30 or 31 which is operating the respective uncoiler, slitter or coiler, as the case may be.

As best seen in FIGS. 4 to 7, the drag wipe 25 comprises a base 32 which supports a laterally extending bottom friction member or anvil 33 covered with a suitable friction fabric 34 such as felt secured by locking strips 35 and bolts 36 (FIGS. 6 and 7).

Supported at one side of the base as best seen in FIG. 5 is a pivot 37 on which is pivotally mounted a top support 38 which extends clear across the drag wipe and has a latching extension 40 which in operating position rests on a latching portion 40' from the base, being locked down by bolts 41 extending from the base through openings in the extension 40, pressure being applied by nuts 42.

When it is desired to thread additional mults of a new strip through the drag wipe, the drag wipe is opened by removing the nuts 42 and applying suitable fluid pressure to the end 44 of fluid cylinder 45 which is pivotally mounted at 46 on the base and which has a piston and rod combination 47 which pivotally connects at 48 with the top support.

In order to lower the drag wipe, it is merely necessary to reverse the action of the fluid cylinder 45, either by releasing fluid pressure from the end 44 or also applying fluid pressure to the opposite end if desired.

At opposite ends of the top support which correspond to the sides of the stock, the top support 38 mounts fluid cylinders 50, FIGS. 4 to 6, which have piston and rod combinations 51 which have clevis ends 52 which pivotally connect at 53 with opposite ends of a frame 54 extending from one side to the other of the drag wipe. The frame 54 moves up and down bodily under the action of the fluid cylinders 50, which are subjected to the same fluid pressure.

Symmetrically placed in the top support and running sidewise with respect to the motion of the stock, there are guides 55 secured to the support and best seen in FIG. 6 which guide vertical plates 56 secured to the frame 54 and vertically guiding pressure blocks 57 which are of such narrow width that they will bring pressure on only one or a few mults.

Each of the pressure blocks 57 has an elongated slot 58 in the direction of motion toward and away from the mults 24, and a pin 60 extending through the slots 58 and secured at opposite ends in the frame 54 prevents displacement of individual pressure blocks.

At intervals along the width of the drag wipe, vertical screws 61 are threaded through the frame 54, bearing on the pressure blocks, having suitable slots 62 at the ends for manipulation and provided with lock nuts 63.

Engaging on the side of each of the pressure blocks adjoining the stock and extending fully across the drag wipe, there is a resilient sheet or spring 64, and over the sheet 64 individual to each pressure block extends friction material such as felt or the like 65 held by locking strips 66 and screws 67.

Mounted on the top support of the drag wipe suitably toward the outgoing end is a guide roller 68 positioned on the upper support and journaling in bearings 70 at the ends.

As will be explained later, the outer mults tend to extend and form loops between the slit and the drag wipe and to guard against this problem a looping pit 71 is provided between the slit and the drag wipe provided with an apron and guide roller 72 adjoining the slit and with guide means 73 adjoining the drag wipe.

In operation, the individual screws 61 engaging the drag wipe pressure blocks 57 are adjusted so that generally the same amount of frictional resistance is applied to thinner mults toward the outer edges and to thicker mults toward the longitudinal middle of the strip or plate. The fluid pressure in the cylinders 50 is adjusted so that both cylinders are subjected to the same air pressure and that adequate frictional drag overall is applied to permit tight winding of each of the final coils.

With the nuts 42 removed and the upper portion of the drag wipe raised under the action of cylinder 45, the uncoiler is started, the stock is run through the slit and the mults coming out of the slit are threaded through the drag wipe and attached to the recoiler 27.

Then the upper support of the drag wipe is lowered into position by reversing the action of the cylinder 45 and the nuts 42 are tightened to latch the drag wipe for operation.

The uncoiler, slit, drag wipe and recoiler then operate in unison to provide a plurality of different coils on the recoiler 27 which are wound with equal tightness but to different outside diameters. No longer is there a tendency to slack wind the coils which are most remote from the longitudinal middle of the strip or sheet, since the drag wipe equalizes the frictional retardation or tension on each mult. No cardboard spacers are inserted. As the winding progresses, since the peripheral speed is a function of diameter and since the mults which are farthest from the longitudinal middle are of smaller diameter, it will be evident that surplus stock accumulates between the slit and the rewinder on the outer mults. By providing the looping pit 71 between the slit and the drag wipe, it will be evident that loops will form in the looping pit on these mults which are most remote from the longitudinal middle until such time as the coils formed from the mults near the longitudinal middle have been completely wound, and at that time these loops will be taken up by winding additional material on the coils produced from the outer mults.

It will be evident that in order to assist in threading in the forward ends of mults just arriving at the drag wipe, it is very advantageous, as shown in FIG. 3, to provide a table 71' which is movable from a horizontal position above the pit to a vertical position at the side of the pit, in cooperation with the apron 72 which can be lowered, as shown in FIG. 3, or raised to a horizontal position to aid in guiding. It will be understood that the table and the apron can be suitably moved by a fluid operated mechanism or otherwise.

If the relationship between the frictional drag on the inner and outer mults is not properly adjusted, this can be corrected by tightening or loosening the hold-down screws 61, and if inadequate pressure or excessive pressure is being applied to all of the mults, this can be adjusted by changing the fluid pressure on cylinders 50.

The presence of the resilient strip 64 running across the individual pressure blocks will tend to make a gradual adjustment of pressure applied to the individual mults at the lateral edge of each pressure block.

It will be understood that relative adjustment of the screw pressure on the individual pressure blocks and fluid pressure in the cylinders 50 may be required in winding mults of overall thicker stock as compared to overall thinner stock.

In view of our invention and disclosure, variations and modifications to meet individual whim or particular need will doubtless become evident to others skilled in the art, to obtain all or part of the benefits of our invention without copying the apparatus shown, and we therefore claim all such insofar as they fall within the reasonable spirit and scope of our claims.

We claim:

1. In a drag wipe for adjusting the tension on a plurality of mults of work sheet or strip, a base, support means on the base, fluid pressure rod and cylindrical means mounted on the support means at opposite sides of the mults, a frame mounted on the piston rods at opposite sides, adjustable guides on the frame, pressure blocks loosely supported on the frame in the guides, and adjustable with respect thereto, screw means operating between the individual pressure blocks and the frame for moving the pressure blocks relatively to the frame in the guides, an anvil extending across the base and adapted to engage the opposite side of the work from the pressure blocks, and resilient means extending across the face of the individual pressure blocks from one side to the other and adapted to redistribute the pressure.

2. A drag wipe of claim 1, in combination with frictional material extending over the resilient means and extending across the pressure blocks, engaging the work.

3. A drag wipe of claim 2, in which each of the pressure blocks has a slot elongated in the direction toward and away from the work, and a pin extends across through the slots of the various pressure blocks and supported on the frame.

4. A drag wipe of claim 3, in combination with pivot means interconnecting the support means and the base at one side of the work, latch means interconnecting the support means and the base at the opposite side of the work, and means for tilting the support means and with it the pressure blocks so as to insert new work.

5. A drag wipe of claim 4, in combination with a guide roller on the support means which engages the stock as it passes through the drag wipe.

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