Sept. 4, 1956 D. BUCCICONE 2,761,682

PILER STOP MECHANISM

Filed June 15, 1951. 2 Sheets-Sheet 1

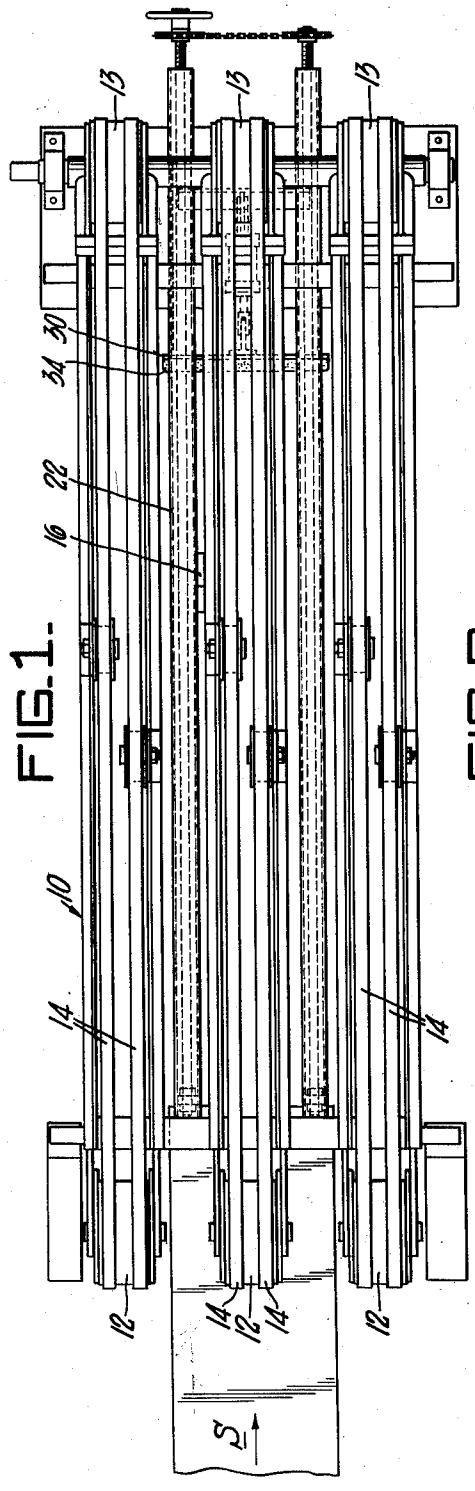


FIG. 1.

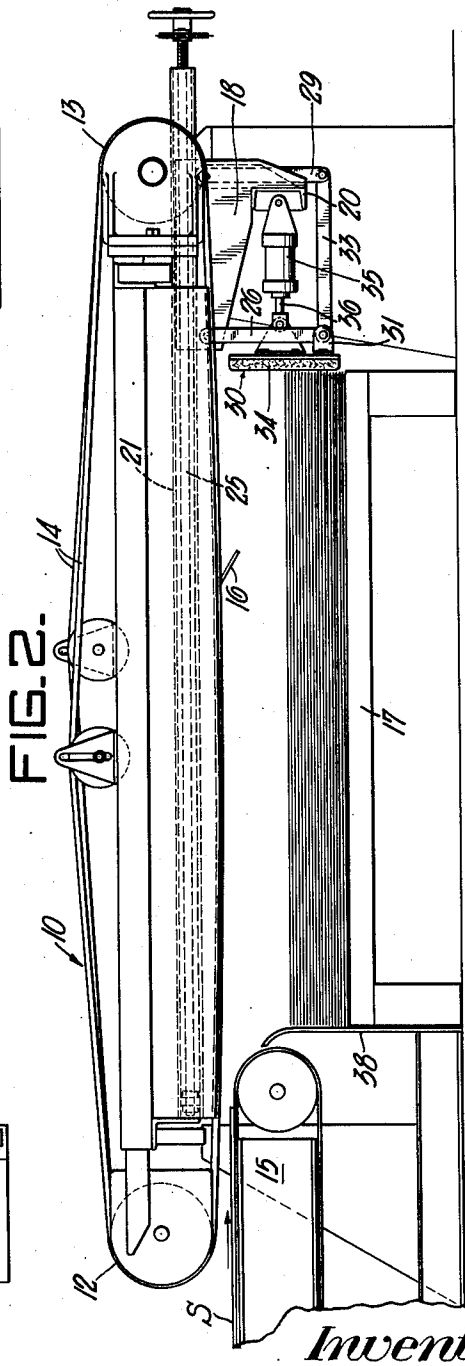


FIG. 2.

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FIG. 4.

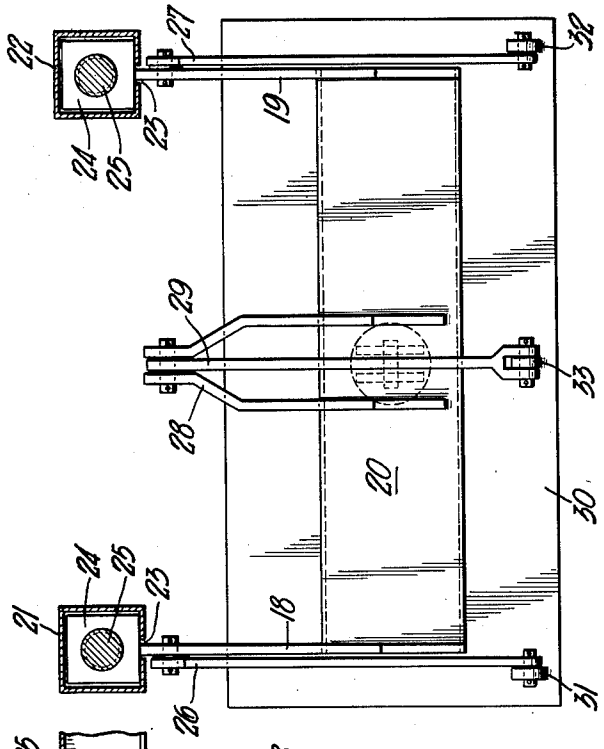
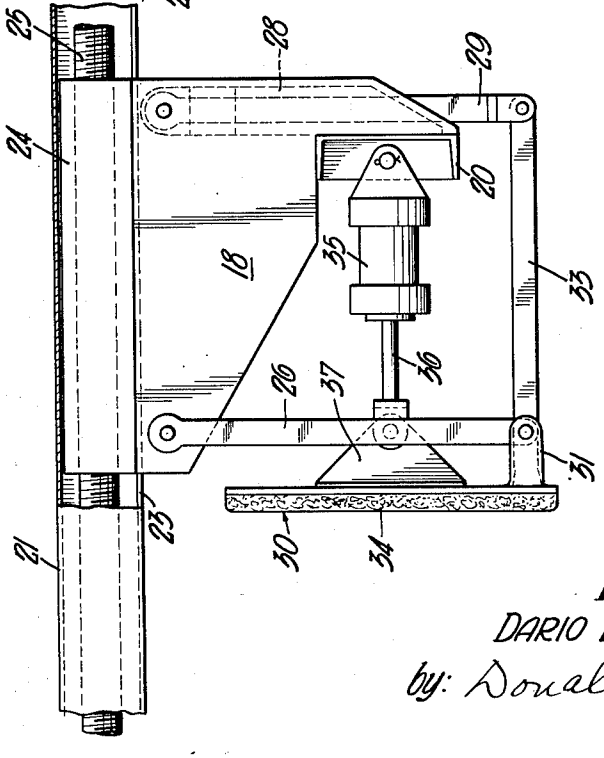


FIG. 3.



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PILER STOP MECHANISM

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Application June 15, 1951, Serial No. 231,732

2 Claims. (Cl. 271—86)

This invention relates to an improved stop mechanism for aligning metal sheets as they are piled.

An object of the invention is to provide an improved stop mechanism which is adapted to be used with a magnetic conveyor and is capable of aligning sheets without damaging them as they emerge from a high speed processing line.

A further object is to provide an improved stop mechanism which includes a yieldable bumper adapted to receive the impact from the leading edges of sheets dropped from a magnetic conveyor and a fixed abutment adapter thereafter to be engaged by the trailing edges of the sheets for aligning them.

In accomplishing these and other objects of the invention, I have provided improved details of structure, a single form of which is shown in the accompanying drawings, in which:

Figure 1 is a top plan view of a magnetic rail conveyor which is equipped with an improved stop mechanism embodying features of the present invention;

Figure 2 is a side elevational view of the conveyor and stop mechanism; and

Figures 3 and 4 are side and end elevational views respectively on a larger scale of the stop mechanism.

Figures 1 and 2 show somewhat diagrammatically a magnetic conveyor **10**, which includes sets of sheaves **12** and **13**, at least one of which is power driven, and endless belts **14** extending around said sheaves. The conveyor contains electromagnets, not shown, which have downwardly facing poles and which, when energized, are adapted to hold sheets S against the underside of belts **14** so that the belts can advance the sheets toward the right. A feed conveyor **15** introduces sheets S sheared from a continuous strip to the left or entry end of conveyor **10**. An operating arm **16** of a normally closed control switch for the electromagnets extends into the path of sheets advancing along the underside of conveyor **10**. The position of this arm is adjusted so that the leading edge of each sheet engages the arm to open the switch, de-energize the magnets, and drop the sheet as the sheet reaches the proper position with respect to the stop mechanism, hereinafter described. A lift arrangement **17** beneath the conveyor **10** supports the pile of sheets. The parts thus far referred to, aside from the stop mechanism, are not per se a part of the present invention, but can be of any standard or desired construction, and therefore are not shown nor described in greater detail.

The stop mechanism of the present invention comprises a frame which is suspended from above beneath conveyor **10** near the exit end and normally is stationary, but can be adjusted longitudinally of said conveyor. This frame includes a pair of spaced apart vertically disposed side plates **18** and **19** and a transverse beam **20** rigidly attached to said plates. A preferred suspending means includes a pair of hollow beams **21** and **22** which extend longitudinally either within conveyor **10**, as illustrated, or on opposite sides thereof. These beams have longitudinal slots **23** in their underside through which plates

18 and **19** extend. Nuts **24** are slidably mounted within the beams and the upper edges of the plates are rigidly fixed to these nuts. Screw-threaded spindles **25** are engaged with each nut and are suitably restrained against axial movement. Consequently rotation of the two spindles adjusts the longitudinal position of the frame. This adjustment accommodates the mechanism for piling sheets of different lengths.

A pair of downwardly depending links **26** and **27** are pivoted to the upper rear edges of plates **18** and **19**. The frame also includes an upwardly extending bracket **28** which is fixed to the mid-portion of the transverse beam **20**. A downwardly depending link **29** is pivoted to the upper end of this bracket. A bumper **30** has a pair of short length tongues **31** and **32** pivoted to the lower ends of links **26** and **27** and a longer tongue **33** pivoted to the lower end of link **29**. This mounting enables the bumper to swing under the impact of sheets. The outer or exposed face of the bumper preferably has a resilient covering **34** of rubber, leather or like material against which the leading edges of sheets S can strike without damage. This outer face is vertical. The upper pivot points of links **26**, **27** and **29** are all at the same level and likewise the lower pivot points, and the links are all of the same length. Consequently the bumper always remains vertical as it swings'

The mechanism comprises cushioning means connected between the frame and the bumper. In the structure illustrated the cushioning means includes a pneumatic cylinder **35** pivoted to the transverse beam **20** and containing a reciprocable piston and piston rod **36**. The free end of said piston rod is pivoted to a bracket **37** on the inner face of bumper **30**. Behind the piston the cylinder contains air under pressure, which tends to force the bumper to the left to a fully extended normal position. As the leading edge of each sheet dropped from conveyor **10** strikes the exposed face of the bumper, the initial impact forces the bumper to the right against the pressure in the cylinder which thus absorbs the force of the impact. However, this pressure quickly restores the bumper to its normal position and, as the bumper moves back, it pushes the sheet along with it to the left.

A fixed abutment **38** is situated in back of or to the left of bumper **30**. This abutment has a vertical face adapted to be engaged by the trailing edges of sheets as the bumper pushes them back. Thus the sheets are piled with their trailing edges aligned against the abutment **38**.

From the foregoing description it is seen that the present invention affords a simple mechanism for aligning sheets as they are piled from a high speed processing line. As sheets drop from the magnetic conveyor traveling at high speed, their leading edges strike the bumper without their surfaces scraping across the surfaces of sheets already piled. Since the bumper swings ahead under the impact, it does not damage the leading edges. Since the bumper pushes the sheet back against the fixed abutment at a much slower rate, this final movement does not cause damage.

While I have shown and described only a single embodiment of the invention, it is apparent that modifications may arise. Therefore, I do not wish to be limited to the disclosure set forth but only by the scope of the appended claims.

I claim:

1. A stop mechanism for piling metal sheets emerging from a processing line comprising a normally stationary frame, a bumper plate having a resilient vertical outer face, a plurality of tongues rigidly attached to the inner face of said plate, a parallelogram linkage including links spaced apart in the direction of sheet travel and being of equal effective length, said links being pivotally connected at their tops on the same height to said frame

and at their bottoms on the same height directly to said tongues which thereby form an integral part of said linkage, said linkage thus supporting said plate for free swinging movement with the outer face thereof positively constrained to remain vertical as the plate swings, a single cushioning means pivotally connected between said plate and said frame, said plate being adapted to receive the impact of the leading edge of a sheet on its outer face and to swing inwardly on said linkage in response thereto, said cushioning means opposing inward swinging movement of said plate with the same force regardless of the height at which the sheet strikes and being adapted to return said plate and push the sheet back, and a fixed abutment spaced rearwardly of the outer face of said plate adapted to be engaged by the trailing edge of sheets thus pushed back for aligning their trailing edges.

2. A mechanism as defined in claim 1 in which said cushioning means includes a pneumatic cylinder and piston pivoted at one end of the inward face of said plate and at the other end to said frame.

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