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RESISTIVE MEANS FOR A SHEET FEEDER

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FIG. 1.

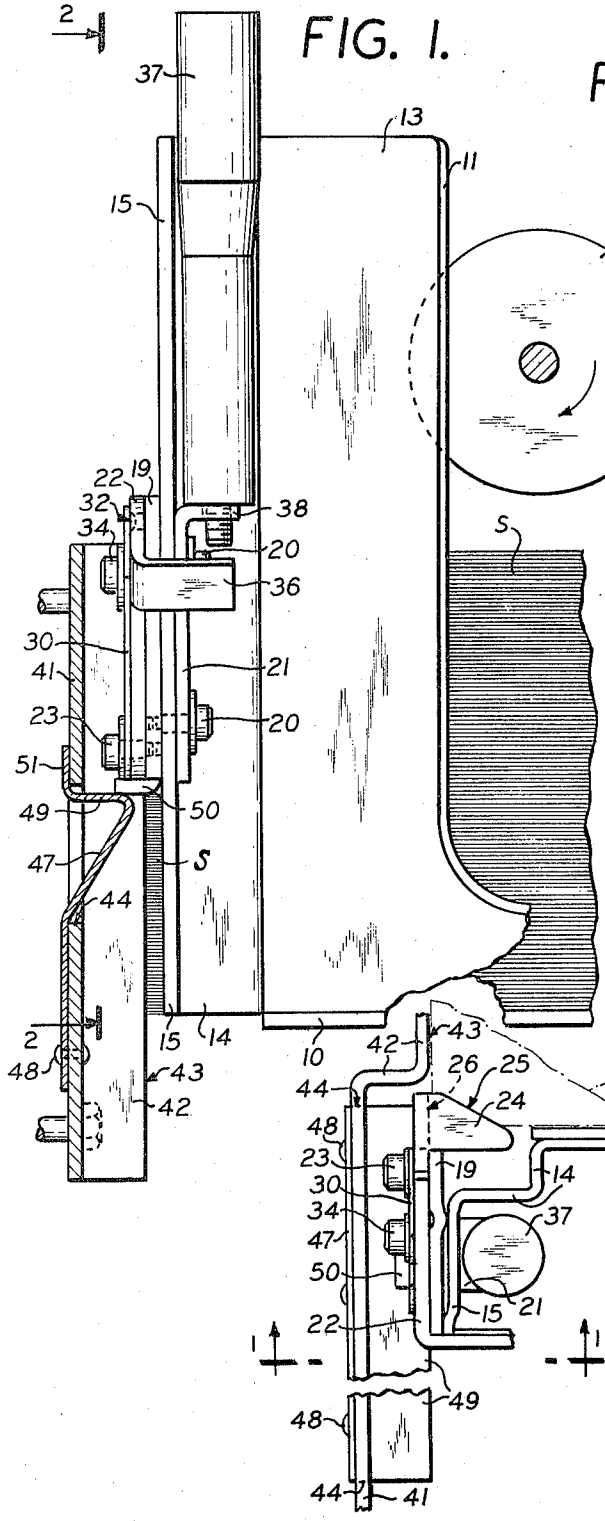



FIG. 2.

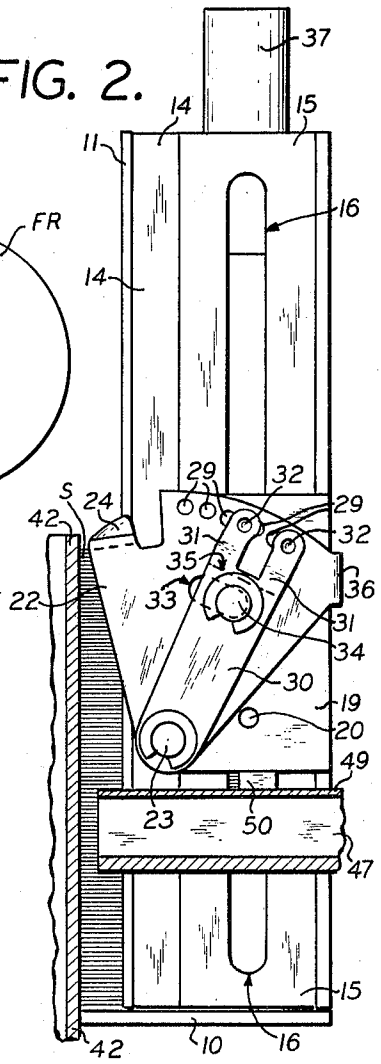



FIG. 3.




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# RESISTIVE MEANS FOR A SHEET FEEDER

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The invention relates to resistive means for providing resistance at the top of a pile of sheets on a delivery platform or tray when feeding the top sheet from the pile to some other machine such as a printing press. A delivery or loading tray comprises a table and a pair of side walls. It is essential that only the top sheet of the pile of sheets on the delivery tray be fed into the press. The resistive means resists the feeding of the top sheet as well as retaining the second and lower sheets on the pile. A sheet feeding roll contacts the top sheet which feeding roll overcomes this resistance as to the top sheet but the second and lower sheets remain in position on the pile. The resistive means also is adjustable as to the amount of resistance offered to the feeding of the top sheet and the resistance which retains the sheets thereunder on the pile of sheets. Again, a resistive means is mounted on each side wall of the tray so that when the side wall is adjusted for the width of sheets to be fed, the resistive means is adjusted therewith and requires no separate attention or adjustment. In fact some delivery or loading trays must be removed from the machine in order to reach the resistive means for adjustment as well as encountering difficulties in freedom of movement.

It is an object of the invention to construct a resistive means for a sheet feeder which is mounted on a side wall of the delivery tray or platform, so that a resistive means is provided at the leading edge of the pile sheets and at each leading edge corner of the sheets.

Another object of the invention is to construct a resistive means to rest upon the top sheet of a pile of sheets which means is adjustable as to the amount of resistance offered to the top sheets.

A still further object is to construct a resistive means which may be latched in elevated out of the way position when loading the platform with a pile of sheets.

Other objects of the invention will be more apparent from the following description when taken in connection with the accompanying drawings illustrating a preferred embodiment thereof in which:

FIG. 1 is a side elevation of the resistive means mounted on a side wall of a delivery tray;

FIG. 2 is a front elevation of the resistive means, and

FIG. 3 is a top view thereof.

A pile of sheets which is to be fed one at a time from the top of the pile to another machine, such as a press, are placed within the tray or platform. This tray comprises a table **10** and the table carries a pair of side walls **11**, the forward end of one being shown. Each side wall is adjustable laterally in any manner on the table such as by adjustment means **12** to accommodate different widths of sheets. Since the side walls are of the same construction and the resistive means carried by each wall is the same, one only is illustrated and described. The top sheet is fed by a feed roll means FR which rests upon the top sheet and is rotated intermittently of for each cycle of the machine at the proper time with relation to the receiving machine such as grippers carried by the impression cylinder of a press.

The side wall **11** carries a bracket **13** at the forward end thereof which forms a part of the side wall. The bracket or side wall has an outward indentation or angular portion **14** forming an outward recess. A slide or guideway is carried by the angular portion shown as a flange **15** extending laterally therefrom. This guideway has a long vertical slot **16** therethrough.



A carrier **19** is slideable vertically on the guideway such as by means of guide screws **20** which are carried by the carrier and pass through the slot and each having a head to engage a carrier plate **21** on the opposite side of the flange, to retain the carrier on the guideway. The carrier mounts a resistive member **22**. Preferably the resistive member is adjustable laterally and is mounted for lateral adjustment such as on a pivot **23** at the bottom thereof. The resistive member carries a prong **24** which lies on the top of the top sheet and over the corner of the top sheet. This prong has an angled edge **25** and the resistive member has an obstructing or abutting surface **26** engaging the corner portion of the leading edge of the top sheet and some of the sheets under the top sheet. The prong **24** tilts upwardly slightly as shown in FIG. 2.

The resistive means is adjustable as to the amount of the resistance offered to the top sheet and sheets by adjustment outwardly or inwardly of the position of the prong **24** and the abutting or obstructing surface **26** of the resistive means. This is accomplished by pivotally adjusting the position of the resistive member on its pivot **23**. The resistive member carries a series of notches shown as formed by a series of six adjacent holes **29** spaced from the pivot and a spring element **30** engages in the holes to releasably retain the resistive member in adjusted position. The spring element shown is secured to the carrier **22** on the pivot **23** and the usual spring washer and carries at least one tine with a pair of spaced tines **31** being shown. Each tine carries a nub **32** pressed outwardly which nub is received in one of the notches or holes. The nubs of the two spaced tines are spaced apart such that when one nub is in one hole, the nub on the other tine is between holes so that with the six holes provided there are six different available positions for the resistive member. The resistive member may have a slot **33** therethrough for receiving a rivet **34** which further secures the spring element to the carrier and maintains the nub on the tines in yieldable contact in a hole. The tined end of the spring element is bent inwardly along a bending axis **35** to give the tines the yieldable contact of the spring element on the resistive member. The resistive member may have a stop flange **36** which abuts the edge of the carrier to limit the extreme inward position of the prong or its outward position from the recess portion **14**. The carrier is provided with a weight **37** which is received in a threaded hole **38** in the carrier which may be easily removed and replaced by a weight of a different size.

Latching means are provided to hold the resistive means in elevated position when loading a pile of sheets on the table **10** of the tray or platform so that the resistive means is out of the way and the pile of sheets may be inserted below the prong or prongs of the two resistive means. The latching or holding means may be carried by any convenient part, however, the latching means shown is attached to a frame member shown as an aligning plate **41** usually carried by a press and forming a part of the frame of the press or machine. This plate has a projecting channel portion **42** at the center thereof and about two inches wide, the rearward surface **43** of which serves as an abutting face for the leading edge of the pile of sheets on the table so that they are properly located with respect to the feed roll means FR and the press. A long horizontal slot **44** is provided on each side of the aligning channel which slot extends from the edge of the tray to a point approximately at or adjacent to the side of the channel.

The latching means includes a ledge member **47** which is secured to the aligning plate such as by means of rivets **48** and on the inner surface of the aligning plate. Preferably too this ledge member is retractable such as

by making it of resilient material. The ledge member carries a rearwardly projecting ledge **49** extending out of the slot and engages the carrier or a forwardly extending flange **50** thereon which engages or rests on the ledge and retains the resistive means well above the top of the pile of sheets on the table when loading. The ledge is somewhat below the flange **50** when the top sheet is in feeding position and engaging a feed roll FR so that the weight of the resistive means is on the sheets and the top sheet. The ledge member carries a stop **51** which abuts the inner surface of the frame member or aligning plate **41** and limits the outward movement of the ledge.

When placing a pile of sheets on the table of the delivery or loading tray, it is lowered to its lowermost or a low level and the pile of sheets is placed on the table with the leading edge of the pile abutting the stop surface or abutting surface **43** of the channel. The side walls of the tray are moved inwardly so that they are at the side edges of the pile of sheets. The resistive means on each side wall is moved therewith and in addition the resistive means is retained at a high level by the latching means. The tray or platform is then raised whereupon the top sheet engages the prong of the resistive means on each side wall and each resistive means is raised therewith so that it is above the latching means or ledge **49**. The top sheet is brought into contact with the feed roll means FR. In this position the flange **50** has been raised sufficiently above the ledge so that the weight of the resistive means is on the top sheet of the pile. As sheets are fed to the machine or press, the tray or platform is raised in known manner so that the top of the pile is always in sheet feeding position. The top sheet is fed by intermittent rotation of the feed roll means FR against the resistance of the resistive means. The second and underlying sheets however, remain in place on the pile.

The top sheet is fed past each prong by the corners of the top sheet curling back under the forward projection of the feed roll means until the corner is free of the prong **24** of each resistive means. With the inclined edge **25** of the prong **24** extending outwardly, a greater portion of the prong overlies the corner when the prong is adjusted outwardly from the recess or inwardly over the pile of sheets. As seen in FIG. 2, the abutting surface **26** of the resistive means obstructs any forward movement of the second and underlying sheets. It will be seen too, that the outward movement of the prong from the recess of the angular portion **14** presents an increasing width of abutting surface **26** presented to the underlying sheets. The resistance to feeding of the top sheet may be adjusted additionally by changing the size of the weight **37**.

This invention is presented to fill a need for improvements in resistive means for a sheet feeder. It is understood that various modifications in structure, as well as changes in mode of operation, assembly, and manner of use, may and often do occur to those skilled in the art, especially after benefiting from the teachings of an invention. This disclosure illustrates the preferred means of embodying the invention in useful form.

What is claimed is:

**1.** A resistive means for a sheet feeder using a delivery tray movably mounted on a frame and having a table comprising a vertical side wall forming a part of the tray, means carried by the side wall to adjustably mount the side wall on the tray for lateral movement, the side wall having a forward end and an inner surface, a vertical guideway carried on the forward end of the side wall, a carrier, means mounting the carrier for free movement on the guideway, and a resistive member carried by the carrier including a prong projecting laterally to present an abutting surface beyond the inner surface of the side wall and projecting rearwardly so as to rest on the top of a pile of sheets.

**2.** A resistive means as in claim **1** including an angular portion at the forward edge of the side wall forming a recess, the guideway being adjacent to the angular portion, mounting means carried by the carrier adjustably mounting the resistive member and the prong for lateral adjustment into and outwardly from the recess of the angular portion.

**3.** A resistive means as in claim **2** in which the mounting means includes a pivot on the carrier on which the resistive member is mounted, a plurality of spaced notches provided on the resistive member and spring means carried by the carrier and engaging a selected notch.

**4.** A resistive means as in claim **3** in which the spring means includes a pair of spaced tines, the tines being spaced apart a distance such that when one tine engages a notch the other tine engages between notches.

**5.** A resistive means as in claim **1** including in combination latching means engaging the carrier in an elevated position in the guideway to hold the carrier elevated on the side wall.

**6.** A resistive means as in claim **5** for an adjustable side wall including in combination a frame member adjacent to the forward end of the said wall, in which the latching means includes an elongated horizontal ledge member mounted on the frame member and having a ledge adjacent to the resistive means in elevated position and of a length corresponding to the extent of adjustment of the side wall on the table, and the carrier engaging the ledge.

**7.** A resistive means as in claim **6** in which the elongated ledge member is yieldable forwardly away from the carrier.

**8.** A resistive means as in claim **7** in which the frame member has an elongated horizontal slot therethrough for each side wall, the slot having a length corresponding to the lateral adjustment of the side wall, the ledge member being of flexible material and secured to the inner surface of the frame member, and the ledge extending through the elongated slot.

**9.** A resistive means as in claim **8** in which the ledge member has a lower angular portion extending towards the side wall and the upper end thereof being bent inwardly forming the ledge.

**10.** A resistive means as in claim **1** including a weight, and means carried by the carrier replaceably receiving the weight.


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