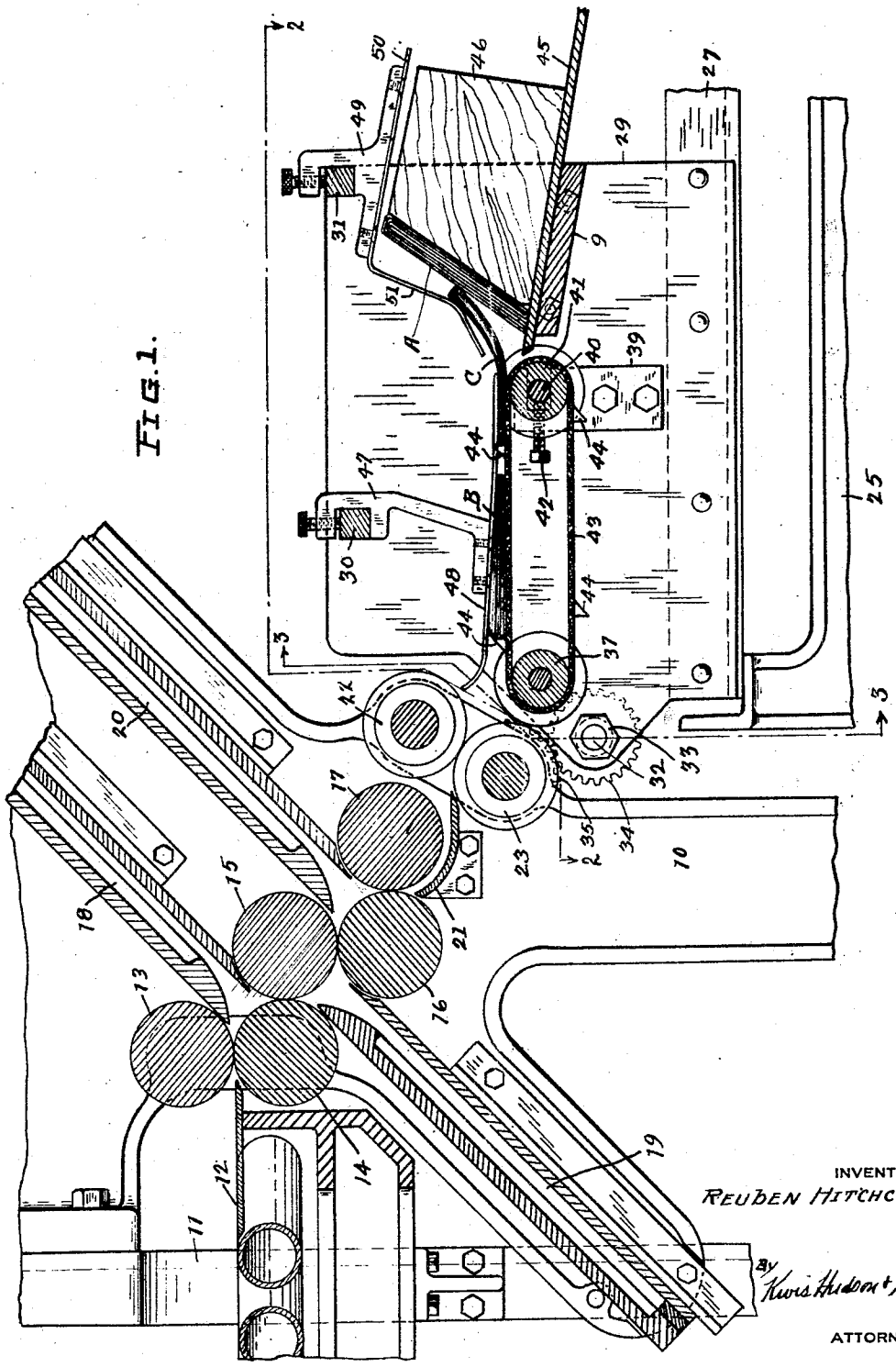
Dec. 30, 1930. R. HITCHCOCK 1,786,752

STACKER

Filed Nov. 23, 1928 2 Sheets-Sheet 1

FIG. 1.



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STACKER

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FIG. 2.

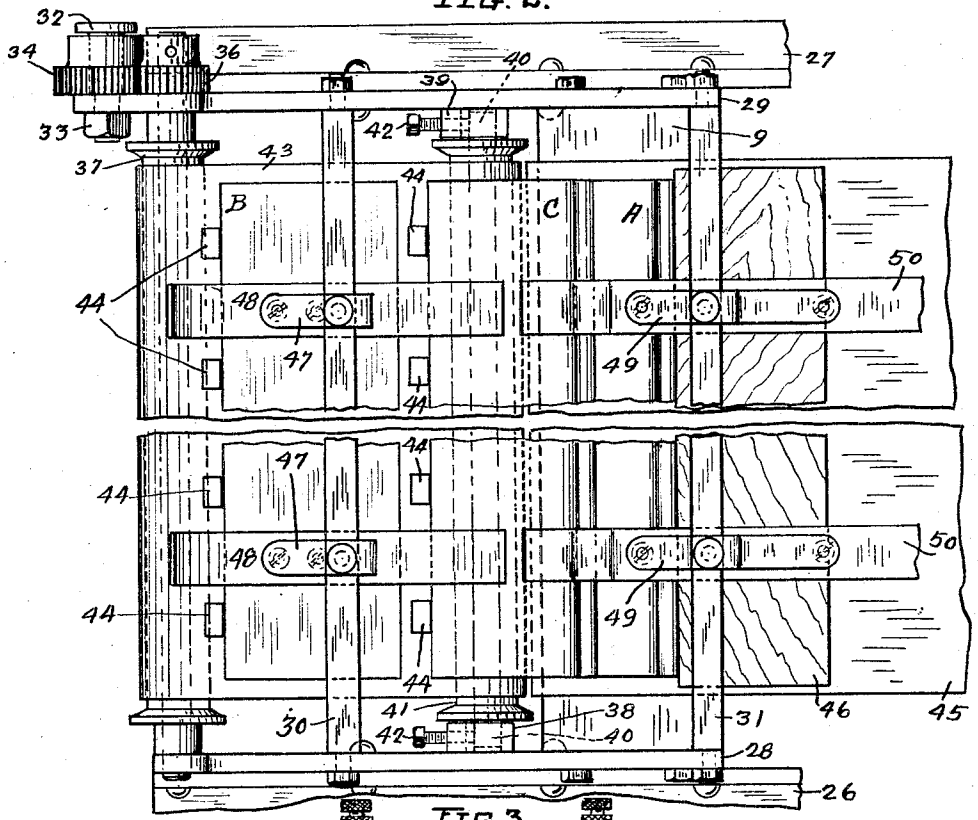
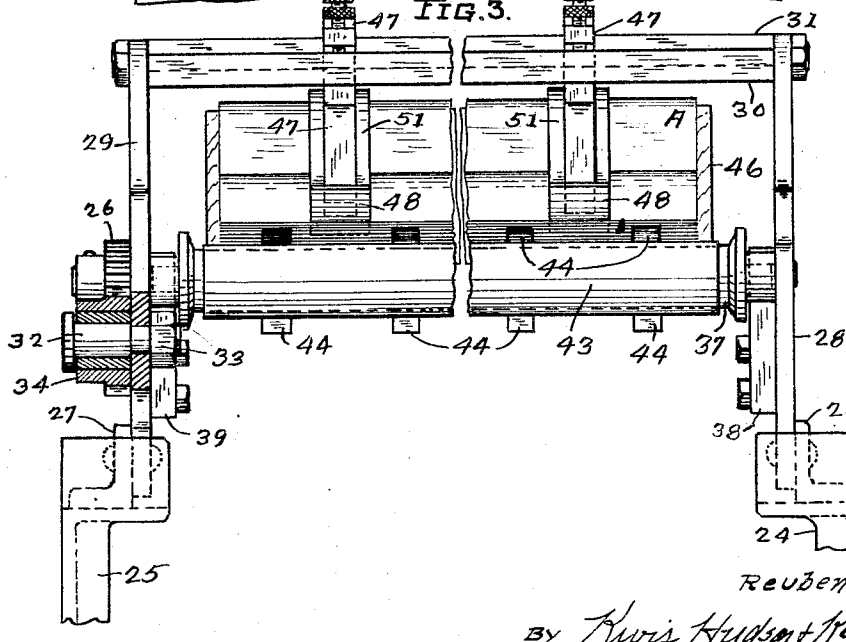


FIG. 3.



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UNITED STATES PATENT OFFICE

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STACKER

Application filed November 23, 1928. Serial No. 321,352.

This invention relates to improvements in stackers for paper handling machines, particularly paper folding machines, and has special utility in the stacking of folded sheets of small size.

One of the objects of the invention is the provision of a stacker which shall be adapted to operate satisfactorily upon sheets of small size.

Another object is the provision of a stacker of this character in which the movement of the sheets themselves is made effective to advance the stack.

Another object is the provision in a stacker of feeding means adapted to resist buckling of the folded sheet, whereby the sheet itself is adapted to transmit energy edgewise of the sheet in sufficient amount to produce the required travel of the stack.

Other objects and features of novelty will appear as I proceed with the description of that embodiment of the invention which, for the purposes of the present application, I have illustrated in the accompanying drawings, in which

Figure 1 is a longitudinal vertical sectional view illustrating one embodiment of the invention mounted for use in conjunction with a paper folding machine of the buckle fold type.

Fig. 2 is a plan view of the stacker alone, the view being taken substantially on the line 2—2, Fig. 1, and

Fig. 3 is an end elevational view of the stacker, the view being partially in section upon the line 3—3 of Fig. 1.

In Fig. 1, frame members of a folding machine are indicated at 10 and 11. A fragment of a feed table of the folding machine is shown at 12. Feeding and folding rolls are illustrated at 13, 14, 15, 16 and 17, and fold sections at 18, 19 and 20. These are of conventional form. Folded sheets passing through the rolls 16, 17 are deflected by a curved guide plate 21, and by it directed between delivery rolls 22 and 23. All of the rolls described are positively driven in some suitable manner known in the art.

The stacker frame, which is preferably entirely separate from the frame of the folding machine, may comprise castings 24 and 25 upon which are supported angle bars 26 and 27. To the vertical flanges of these angle bars are riveted or otherwise secured, side plates 28 and 29. These plates are braced near their upper edges by two rectangular bars 30 and 31.

In the plate 29 I mount a headed pintle 32 which has a reduced portion extending through the plate and is threaded on its extremity to receive a nut 33. Rotatably mounted upon the pintle 32 is an idler pinion 34. When the stacker frame is in position adjoining the frame of a folding machine, the pinion 34 is brought into mesh with some conveniently positioned gear on the folding machine, in the present instance a gear 35 on one end of roll 23.

Pinion 34 meshes with a pinion 36 which is pinned to a roller 37 mounted rotatably in the plates 28 and 29. On the inner sides of the two plates 28 and 29 I secure thick iron plates or blocks 38 and 39, having therein horizontal slots in which are mounted the trunnions 40 of a roller 41. Adjusting screws 42 are threadably mounted in the plates 38 and 39 and extend into the slots where they contact with the said trunnions 40. On the rollers 37, 41 I mount an endless belt carrier 43, which is furnished at intervals with projections 44 adapted to engage the rear edges of folded sheets and move them without slippage upon the belt.

Between the plates 28 and 29 beyond the delivery end of carrier 43 I mount a wide bar 9. This bar supports one end of a table 45. The other end of this table (not shown) may be supported by any suitable means. The table, as illustrated in Fig. 1, is slightly below the level of the upper run of carrier 43 and comes into fairly close proximity therewith, so as to be adapted to receive folded sheets from the carrier.

A wooden block 46 rests upon the table 45 and is movable upon the surface of the latter. The front side of this block is preferably inclined, as shown in Fig. 1, and constitutes an abutment for the forward end of a stack of folded sheets, the forward sheet of which is indicated in the drawing at A.

Upon the bar 30 there are mounted for lateral adjustment a pair of brackets 47, carrying sheet metal fingers 48, which are inclined with respect to the surface of the carrier 43, and thus tend to confine the folded sheets between closely spaced walls in order to succesfully resist buckling when the forward edges of the folded sheets are subjected to pressure, as they are in the operation of my stacker. The bar 31 also supports adjustable brackets 49, carrying sheet metal fingers 50. The rear ends of these latter fingers are bent downwardly to form rear abutments 51 for the paper stack. These abutments, which are preferably resilient, are deflected backwardly at their lower or free ends, forming a flared opening to the lower rear side of the stack.

In the operation of the machine, folded sheets are fed in close succession, although not necessarily in evenly spaced relation, from the delivery rolls 22, 23, and received between the upper run of carrier 43 and the rear upwardly flared extremities of fingers 48. The contact of each sheet with the surface of the carrier urges the sheet forward until one of the projections 44 positively engages with the rear edge of the sheet, after which it moves at belt speed. As the sheet moves forward with the belt it is compressed more or less by the fingers 48. A folded sheet in this position is indicated at B in the drawings. As the fingers 48 extend forwardly to a position above the roller 41, a sheet emerging from the endless carrier possesses some little rigidity in its own plane. The forward edge of the sheet, which is folded, therefore strikes the rear of the stack with some little force and tends to push it along upon the table 45, overcoming the inertia of block 46 and the friction between that block and the table 45. The rear side of the stack is inclined, owing to the inclination of the rear side of block 46, and the forward edge of the moving sheet, after its first encounter with the stack, is deflected by the stack as indicated at C in Fig. 1. Further movement forces the forward edge between the rear of the stack and the abutment fingers 51, and if the stack has not already been moved sufficiently to admit the new sheet, the latter exerts a wedging action which separates the stack and the abutments 51. This action may either move the stack or flex the abutments 51. If it does the latter, the energy thus built up is added to when the next sheet is pushed in front of the abutment fingers, and sooner or later this energy becomes sufficient to impart a forward push to the stack and to the block 46. After the machine has run for a time and a considerable number of sheets are in the stack, those which are nearest the block 46 are removed by the operator, and the block is pushed back into contact with the forward sheet of the remaining stack.

While I have shown and described in considerable detail, one particular embodiment of the invention this specific disclosure is for the purpose primarily of fully illustrating the invention, and is not to be construed as constituting any limitation upon the scope of the invention.

Having thus described my invention, I claim:

1. In a sheet stacker for use in connection with paper handling machines adapted to deliver sheets one after another, a table adapted to support a stack of sheets on edge, and means for positively moving sheets one at a time edgewise against the rear of said stack, whereby the latter is advanced on said table step by step.

2. In a sheet stacker for use in connection with paper handling machines adapted to deliver sheets one after another, a table adapted to support a stack of sheets on edge, and means for positively moving sheets one at a time edgewise against the rear of said stack, said means being adapted to resist buckling of the sheet, whereby the stack is advanced on said table step by step.

3. In a sheet stacker for use in connection with paper handling machines adapted to deliver sheets one after another, a table adapted to support a stack of sheets on edge, and means for positively moving sheets one at a time edgewise against the rear of said stack, said means comprising confining walls between which the sheets travel, whereby buckling of the sheets is resisted and whereby the stack is advanced step by step on said table.

4. In a sheet stacker for use in connection with paper handling machines adapted to deliver sheets one after another, a table adapted to support a stack of sheets on edge, and means for positively moving sheets one at a time edgewise against the rear of said stack at an obtuse angle with respect to the planes of the sheets in the stack, whereby all of the sheets are deflected by the stack in the same direction.

5. In a sheet stacker for use in connection with paper folding machines adapted to deliver folded sheets one after another, a table adapted to support a stack of sheets, means for maintaining an inclined position of the sheets in said stack, and means for feeding sheets edgewise one at a time against said stack in a direction lengthwise of the table.

6. In a sheet stacker for use in connection with paper handling machines delivering sheets one after another, means adapted to support a stack of sheets, yieldable means for opposing the travel of said stack, a resilient abutment for the rear end of said stack, and means effective as the said sheets travel toward said stack for forcing them between

said abutment and the rear end of said stack, whereby said yieldable means is overcome and the stack is advanced step by step.

7. In a sheet stacker for use in connection with paper handling machines delivering sheets one after another, means adapted to support a stack of sheets, a resilient abutment for the rear end of said stack, said abutment having a free edge flared away from the rear of said stack, and means effective as the said sheets travel forward one at a time for forcing them between said resilient abutment and the rear end of the stack, whereby the stack previously formed and the abutment are wedged apart.

8. In a sheet stacker for use in connection with paper handling machines delivering sheets one after another at unequal time intervals, means adapted to support a stack of sheets, yieldable means for opposing the travel of said stack, an abutment for the rear end of said stack, a conveyor to convey the sheets to the said support, and projections on said conveyor to engage the rear edge of the sheets to positively force the sheets between the stack and said abutment.

In testimony whereof, I hereunto affix my signature.

REUBEN HITCHCOCK.