United States Patent

[11] 3,580,563

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[45] Patented **May 25, 1971**

[54] **COLLATING MACHINE FEEDING INTO OR OUT OF RACKS**
3 Claims, 10 Drawing Figs.

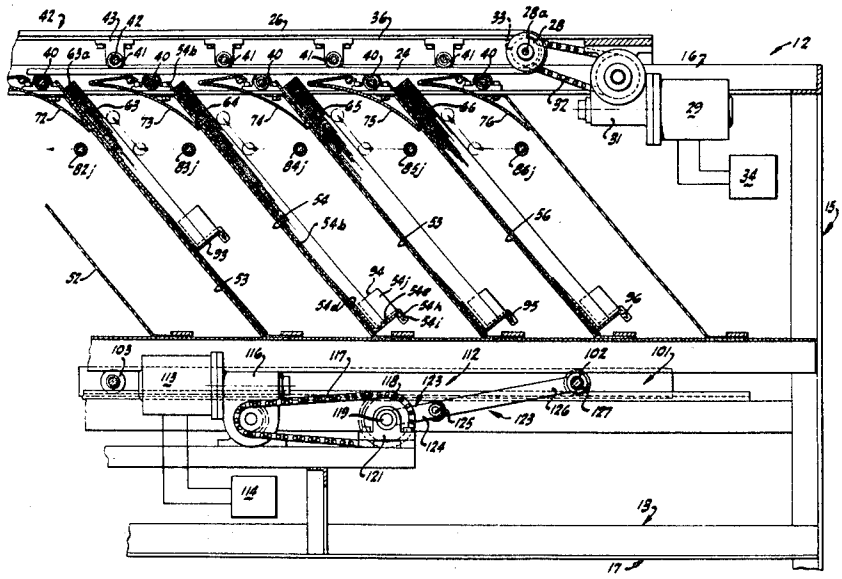
[52] **U.S. Cl.** **270/58,** 271/64
[51] **Int. Cl.** **B65h 39/02**
[50] **Field of Search** 270/58; 271/64

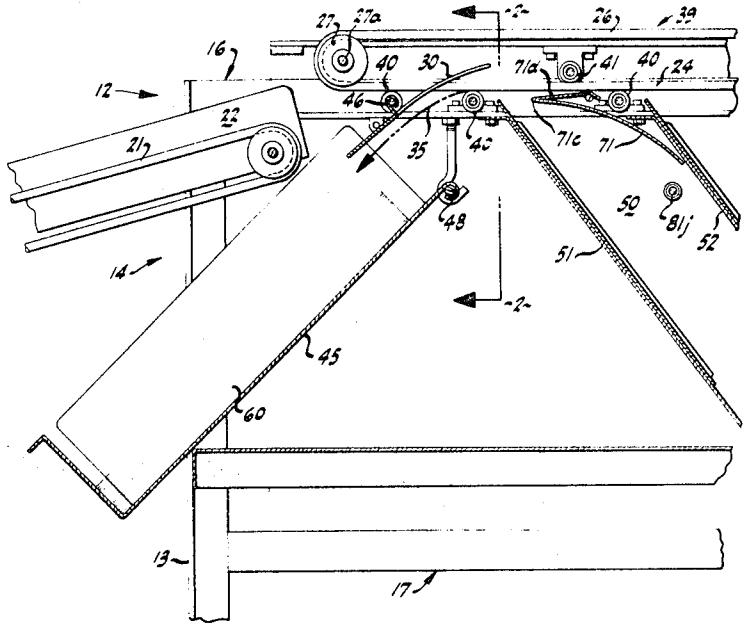
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Assistant Examiner—Paul V. Williams
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ABSTRACT: A horizontal elongated framework carries a plurality of transverse, inclined, parallel, paper-supporting racks. A conveying system on the machine, including a belt, transports sheets of paper emerging from a reproduction apparatus into predetermined ones of the racks. After the desired number of sheets have been placed in the racks in the appropriate sequence, various adjustments are made to the machine, including reversal of belt movement, enabling the machine to collate the sheets of paper previously assembled in the racks. The collating mechanism includes structure enabling the operator to adapt the machine to varying paper sizes, textures and weights.

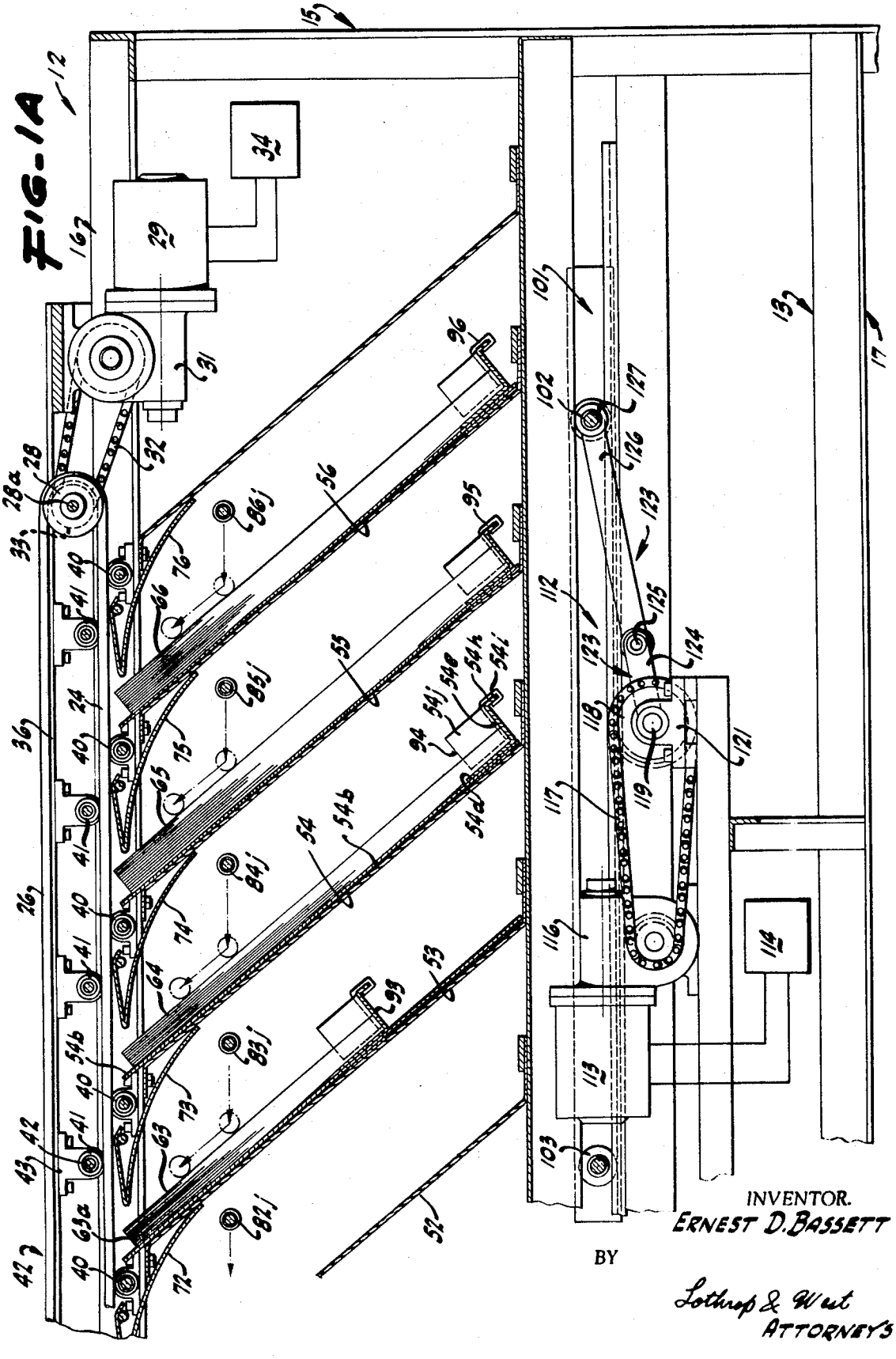




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5 Sheets-Sheet 1

FIG-1A



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FIG. 1B

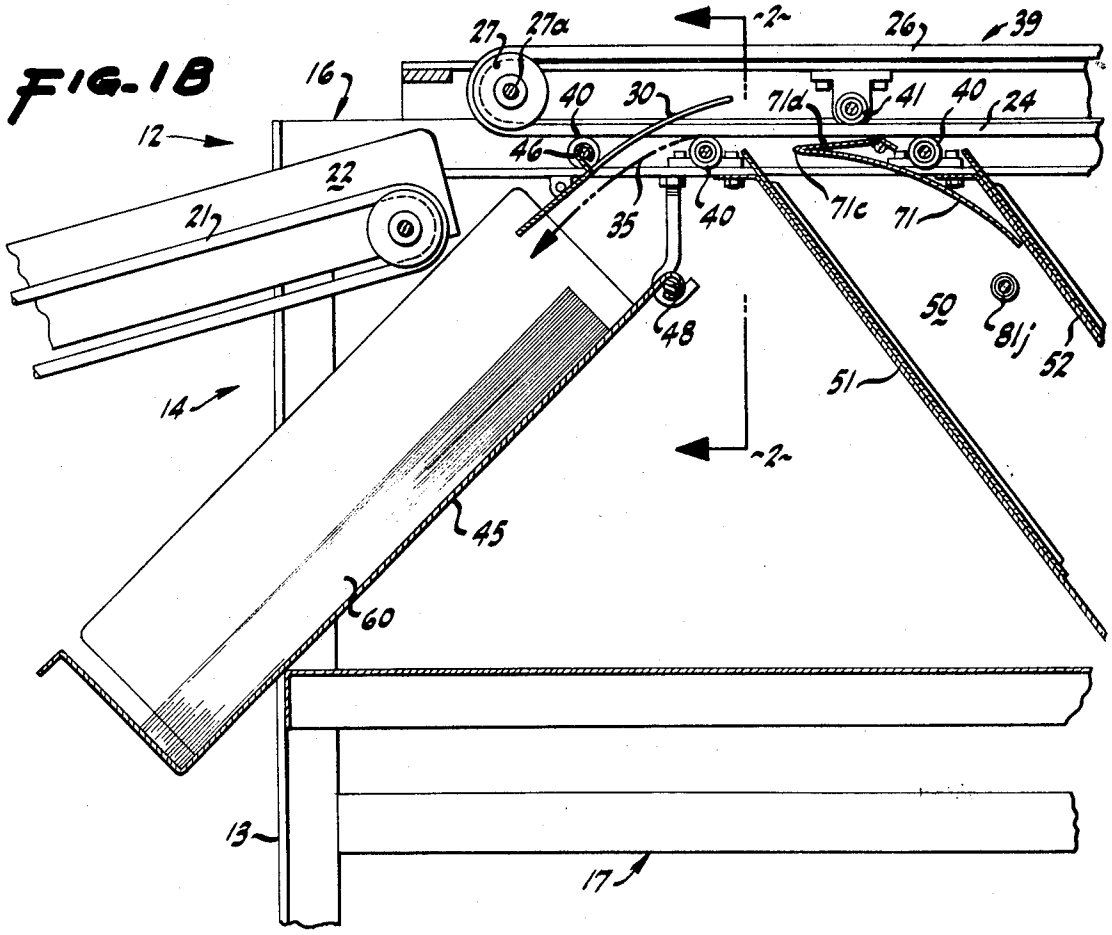
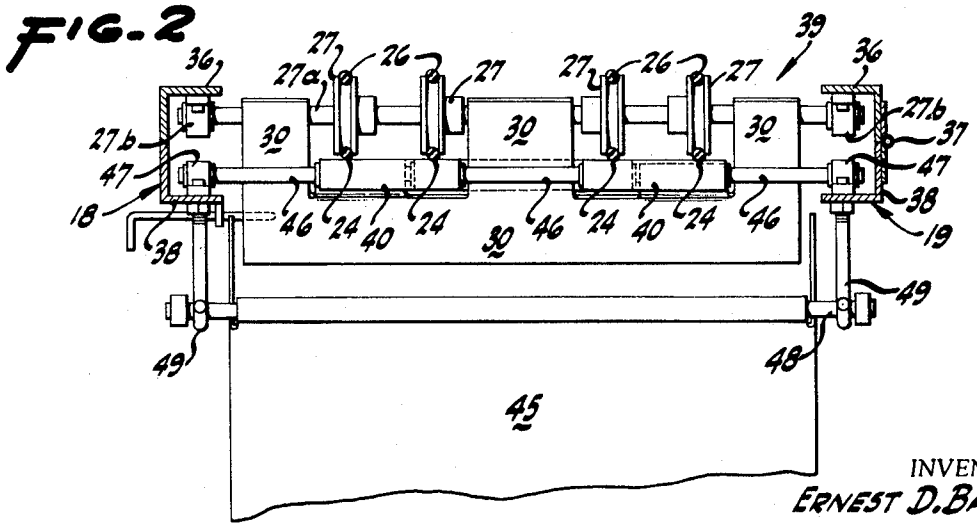


FIG. 2



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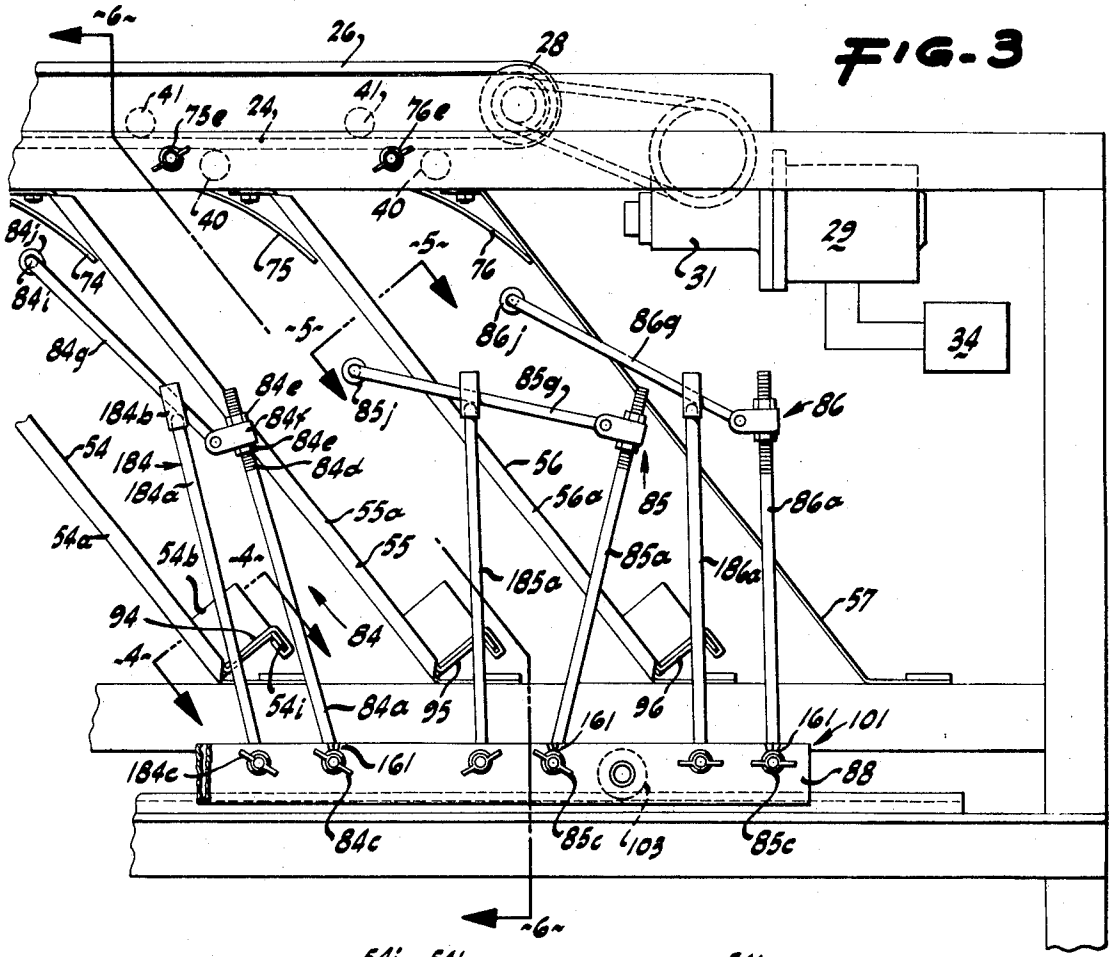


FIG. 3

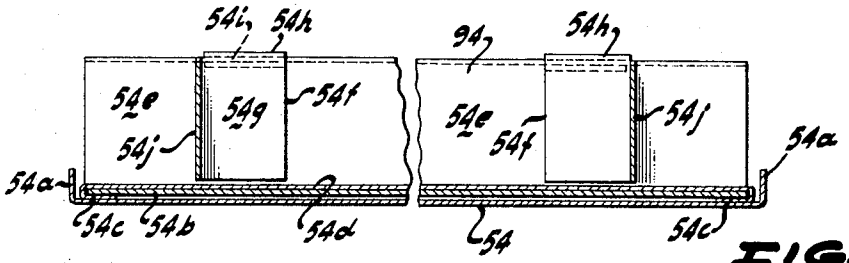


FIG. 4

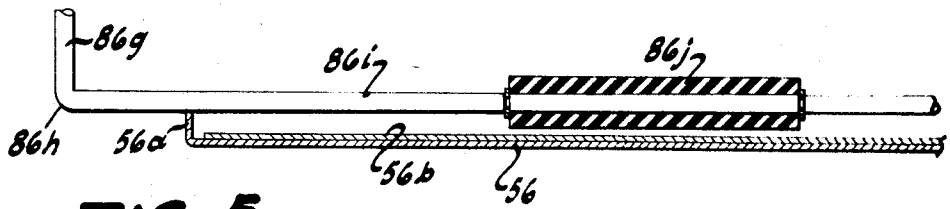


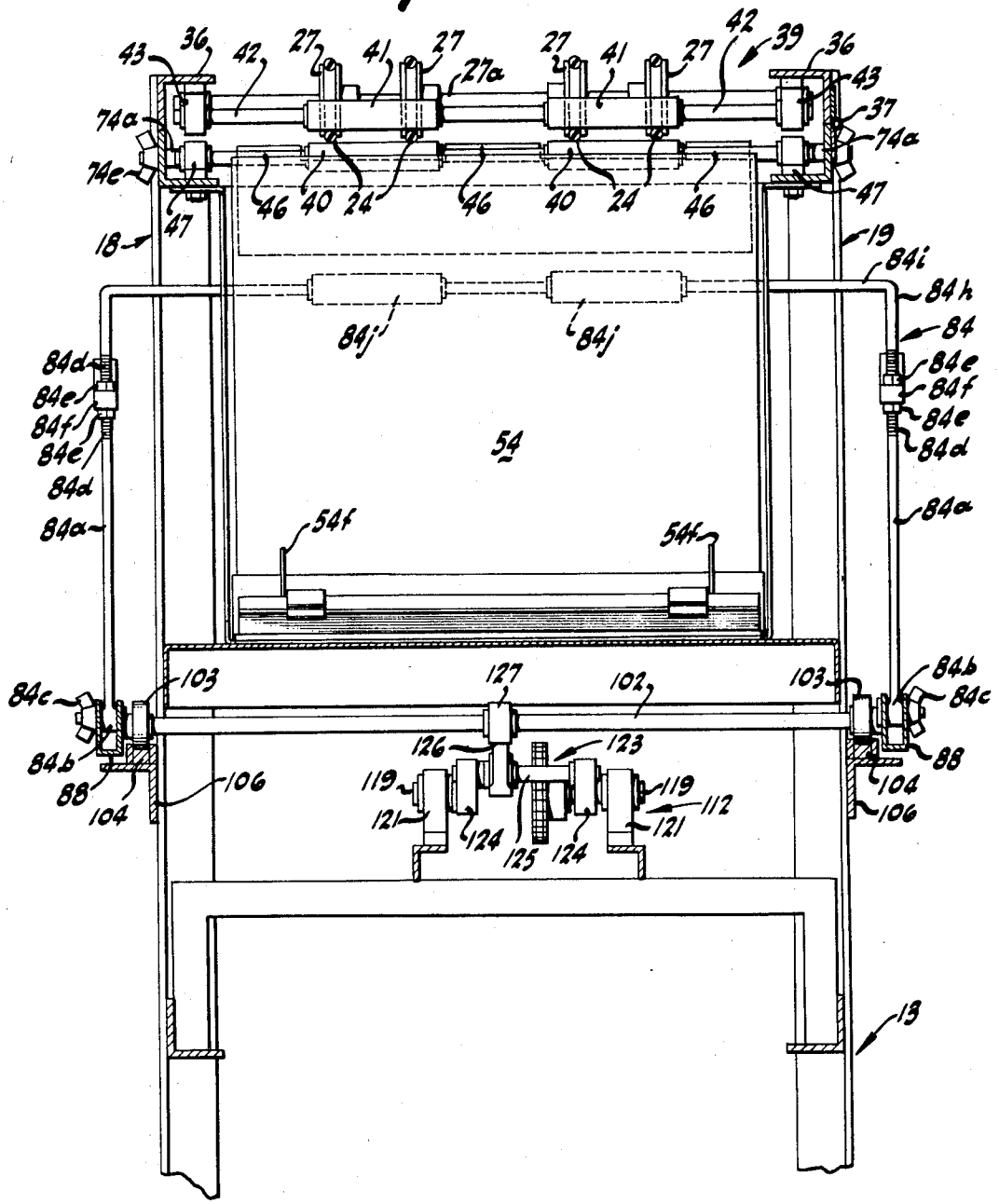
FIG. 5

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FIG. 6



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FIG. 7

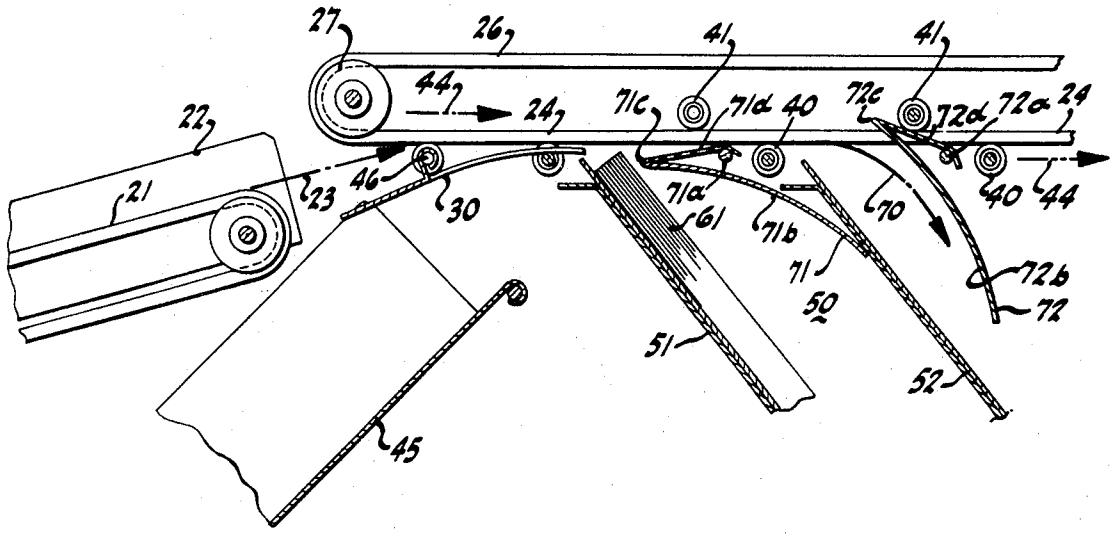
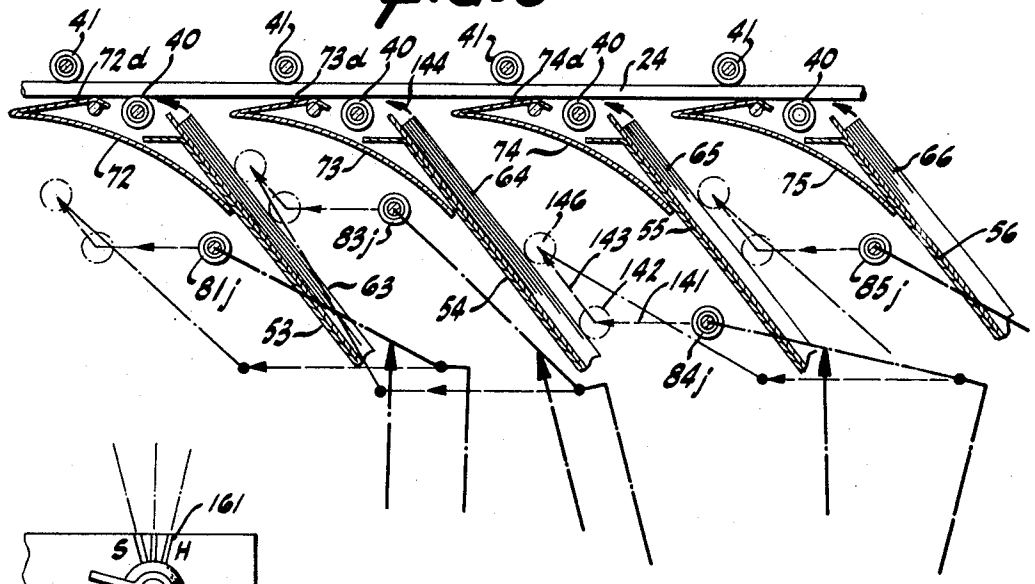


FIG. 8



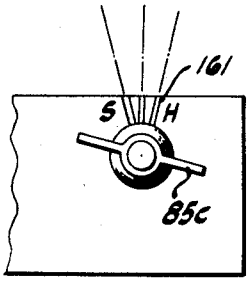


FIG. 9

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COLLATING MACHINE FEEDING INTO OR OUT OF RACKS

The invention relates to improvements in machines for assembling and collating sheets of printed matter and the like.

Heretofore, mechanical collators have been only moderately successful in handling a variety of paper textures and weights. Owing to the structure and manner of operation of the paper-engaging elements previously used, together with an inability to adjust to differing paper characteristics and changes in relative humidity, as well as susceptibility to the effects of static electricity, and the like, the operation of such machines has been accompanied by misses and doubles. By this is meant the occasional tendency for one or more sheets to be skipped in the collation process or, on the other hand, for more than one identical sheet to be picked up. In these circumstances, wastage becomes a factor of importance; and where performance is highly erratic, costly shutdowns and repairs are often involved.

It is therefore an object of the invention to provide a collator which is not only efficient, in the sense that the operation is highly reliable, but which is also versatile and flexible in operation owing to its ability to be adjusted so as to cope with a wide range of paper characteristics and atmospheric conditions.

It is another object of the invention to provide a collating machine which can also be adjusted to assemble stacks of printed matter on the machine in a predetermined location, quantity and sequence, preparatory to collation.

It is a further object of the invention to provide a collating machine which is relatively economical, yet which is rugged, durable, long-lived and quiet in operation.

It is still a further object of the invention to provide an assembling and collating machine which can readily be adapted for use with conventional duplicating, copying and other reproducing machines, as well as with stitchers, staplers and other related apparatus.

It is still another object of the invention to provide a machine which is compact in size yet which affords a high output.

It is an additional object of the invention to provide a paper assembling and collating apparatus, the operation of which can readily be learned even by unskilled personnel.

It is another object of the invention to provide a generally improved assembling and collating machine.

Other objects, together with the foregoing, are attained in the embodiment described in the following description and illustrated in the accompanying drawings, in which:

FIG. 1A is a substantially median, vertical, longitudinal, sectional view of the after end portion of the machine;

FIG. 1B is a view comparable to FIG. 1A, but showing the forward end of the machine, a portion of the paper input conveyor being broken away to reduce the extent of the FIG.;

FIG. 2 is a fragmentary, transverse section view, the plane of the section being indicated by the line 2–2 in FIG. 1B;

FIG. 3 is a fragmentary, side elevational view of the after end of the machine, showing various possible positions of the paper-engaging members;

FIG. 4 is a sectional view, to an enlarged scale, of the paper rack and tray structure, the plane of the section being indicated by the line 4–4 in FIG. 3;

FIG. 5 is a fragmentary sectional view, to an enlarged scale, of a paper-engaging member, the plane of the section being indicated by the line 5–5 in FIG. 3;

FIG. 6 is a fragmentary, transverse, sectional view taken on the compound planes illustrated by the line 6–6 in FIG. 3;

FIG. 7 is a fragmentary, median, vertical, sectional view, to an enlarged scale, of the forward end of the machine for use in the paper assembling operation;

FIG. 8 is a fragmentary, median, vertical, sectional view, to an enlarged scale, of the paper-supporting and paper-engaging members, showing in diagrammatic fashion, the relative locations of the elements for different paper pressure settings; and,

FIG. 9 is a fragmentary side elevational view, to an enlarged scale, of the mechanism for adjusting the paper-engaging members to various pressure settings.

While the apparatus of the invention is susceptible of numerous physical embodiments, depending upon the environment and requirements of use, substantial numbers of the herein shown and described embodiment have been made, tested and used, and all have performed in an eminently satisfactory manner.

The paper assembling and collating machine of the invention, generally designated by the reference numeral **12**, comprises a horizontally elongated framework **13** formed of conventional channel and angle iron members defining a forward end portion **14**, an after end portion **15**, a top **16**, a bottom **17** and a pair of sides **18** and **19** (see FIG. **6**).

In the first mode of operation, viz., as a paper-assembling machine, printed paper sheets emerging from a duplicator, copier or other form of reproduction device (not shown) are transported by a belt conveyor **21** bounded by side walls **22**. As appears most clearly in FIG. **7**, a sheet of paper from a reproduction machine (not shown) is carried rearwardly by the belt **21**, being propelled in the direction indicated by the arrow **23** into engagement with the lower run **24** of two pairs of spaced, parallel endless belts **26** trained around forward pulleys **27** and after pulleys **28** (see FIGS. 1A, 1B and 2). The live pulleys **28** on a common shaft **28***a* are driven by an electric motor **29** through a conventional gear reducer **31**, chain **32** and sprocket **33** (see FIG. 1A). A reversing switch **34** enables the operator to run the belts **26** in either a fore or aft direction. While the belts shown are of circular cross section, they could also be V-shape or of the flat, web variety.

For convenience, the entire paper propelling structure comprising the belts **26**, the pulleys **27** and **28**, the pulley shafts **27***a* and **28***a*, the journal bearings **27***b* and **28***b*, the belt drive mechanism **29** and the longitudinal frame members **36** are hingeably mounted as by a suitable hinge **37** (see FIGS. **2** and **6**) mounted on a subjacent one of the top, longitudinal angle iron members **38** of the machine framework. This pivot construction enables the operator to swing the entire structure, termed a paper propulsion mechanism **39**, upwardly and out of the way for inspection, repair or hand-loading of the paper racks.

Also included as an important part of the paper propelling structure is a plurality of aligned pairs of transverse parallel rollers **41** (see FIGS. 1A and **6**) on shafts **42** carried in journals **43** suspended from the angle irons **36**. The rollers engage the top of the lower belt run **24** and help to guide the belt.

As is clearly shown in FIG. **7**, the bottom run **24** of the belt **26** is moving in the direction indicated by the arrow **44** when machine is operating in the paper marshaling, or paper assembling, mode. In this mode, a plurality of identical sheets run off in the reproduction machine is carried up the conveyor belt **21**, and directed against the underside of the belt **24**, being thereby carried rearwardly in the direction of the arrow **44** until deflected downwardly into an appropriate bin chamber, such as the chamber **50** (see FIG. **7**) defined by a forward, paper-supporting rack **51** and an after paper-supporting rack **52**. The first batch of identical sheets settles by gravity onto the rack **51** and forms a stack **61**, as appears in FIG. **7**.

After the first stack **61** is completed, a first deflector member **71**, pivotally mounted on a pivot **71***a*, is moved into the generally horizontal position shown in FIG. **7**.

Concurrently, a second deflector member **72**, pivotally mounted on the pivot **72***a*, is rotated from the horizontal in a clockwise direction about 35° to assume the generally vertical attitude shown in FIG. **7**.

As will be noted, each of the deflector plates **71**—**76**, for example, deflector plate **72**, includes a gently arcuate lower portion **72***b* (see FIG. **7**) and an upper projected portion sharply recurved at its upper tip **72***c* to form a top portion **72***d*. The top portion **72***d* includes an elevated portion mounted on the pivot **72***a*.

In one attitude, as shown in FIG. **7**, the deflector member can assume the roughly horizontal position of the member **71**, for example, wherein the recurved top portion **71***d* is spaced very slightly below and approximately parallel to the lower run

24 of the belt. In this attitude, the paper sheets are in frictional engagement with, and are propelled by the belt run 24 as they skim over the top of the substantially horizontal portion 71*d*, and pass between the top portion and the lower belt run 24.

Cooperating with the belt guiding rollers 41 on the upper side of the lower belt run 24 is a plurality of lower guide rollers 40 on transverse shafts 46 journaled in bearings 47 (see FIG. 2).

Upon reaching the upwardly projecting portion 72*c* extending above the belt run 24, as is the case in deflector plate 72 (see FIG. 7), the sheet is intercepted and is guided downwardly, in the direction of the arrow 70, onto the subjacent paper-supporting rack 52.

After the requisite number of sheets is stacked on the rack 52, the upturned deflector member 72 is returned to the attitude of the lowered member 71 in FIG. 7, and the next rearward deflector member 73 is thereupon tilted upwardly to intercept and direct downwardly onto the rack 53, the next batch of printed pages from the duplicator.

The foregoing sequence is carried out until all of the stacks of paper 61—66 are deposited on their respective racks 51—56. At this juncture, the conveyor belt 21 leading from the reproduction apparatus to the paper propelling mechanism is no longer necessary, and in order to convert the paper assembling machine to a collator, only a relatively few adjustments are required. These adjustments will now be described.

One adjustment is the counterclockwise tilting (see FIGS. 7 and 1B) of the guide plate 30, about its pivot 46, from the substantially horizontal attitude shown in FIG. 7 to the rearward-upward inclination illustrated in FIG. 1B. In this latter inclined attitude the guide plate 30 is in a position to intercept and deflect forwardly moving papers in the downward direction indicated by the arrow 35 (see FIG. 1B). In other words, paper moving in a left-hand direction, as appears in FIG. 1B, is intercepted by the guide plate 30 and is directed downwardly and forwardly into the inclined catch bin 45 suspended from a crosspin 48 carried by a pair of hooks 49 depending from the fore and aft members 38 of the framework. The papers guided into the catch bin 45 are in collated form, as will shortly be described in detail, and are collectively given the reference numeral 60 (see FIG. 1B).

Next, the operator will check to see that all of the deflector members 71—76 are in a lowered, or retracted, attitude and that the corresponding wingnuts 71*e*—76*e* (see FIGS. 3 and 6) on the ends of their respective pivot shafts 71*a*—76*a* are all tightened so that the deflectors are firmly secured in their down position.

Then, as a next step, the reversing switch 34 is actuated so as to reverse the motor 29 and thereby reverse the direction of movement of the lower run 24 of the belt 26. After reversal, the lower belt run will travel in a forward direction, i.e. from right to left as appears in FIGS. 1A, 1B, 3, 7 and 8.

With the paper propelling belt 26 thus adjusted, together with the deflector members 71—76 in the lowered position shown for example in FIG. 1A, and with the guide plate 30 in the upwardly tilted attitude shown in FIG. 1B, the machine is substantially in condition to commence the collating phase, or mode, of operation.

In order to start the collating operation, a plurality of paper-engaging members, designated by the reference numerals 81—86, are properly positioned and actuated (see FIG. 3).

It is also necessary to locate the individual inclined stacks of paper so that the upper margin of each stack is at a predetermined, uniform position, this being at a distance, for example, of approximately one-half inch below the top edge of the paper racks 51—56, the proper location being conveniently indicated by a suitable indicia, or bench mark, such as a red line.

Where the sheets of a particular stack are shorter in length than the usual paper length, a length compensating mechanism is provided. Referring, for instance, to FIG. 1A, it will be noted that stack 63 is shorter in length than the others. In order to bring the top margin 63*a* of the stack 63 upwardly to the required uniform location, a compensating, vertically movable tray is provided.

For ease in effecting such adjustment, the trays form a part of removable tray structures 91—96 disposed in each of the paper racks 51—56.

The tray structures 91—96 are frictionally positionable at any desired vertical position on the corresponding paper-supporting racks 51—56. Referring, for example, to tray 94 (see FIGS. 1A, 3 and 4) it can be seen that the sides 54*a* of the paper-supporting rack 54 are upturned to form a troughlike structure (see FIG. 4). Within the trough and gravitally supported thereon, there is loosely disposed a rigid rectangular sheet 54*b* of relatively small gauge, the sheet substantially covering the entire bottom of the troughlike rack 54. The upper end of the sheet 54*b* extends somewhat (five-eighths inch for example) beyond the upper margin of the rack 54 itself.

Adjacent the bottom end portion of the sheet 54*b*, the lateral ends 54*c* of a transverse strip 54*d* are recurved around the lateral margins of the sheet 54*b* and snugly embrace said margins so that a snug frictional engagement between the members is afforded. The bottom edge of the transverse strip 54*d* is bent outwardly at right angles to form a tray bottom 54*e*, serving to support the superposed stack of paper.

Varying paper widths can also be handled. With particular reference to FIGS. 3 and 4 it will be noted that a pair of laterally movable slide members 54*f* is in frictional engagement with the tray bottom 54*e*. The slide members 54*f* each include a bottom 54*g* recurved at its outer end 54*h* so as frictionally to embrace a downwardly projecting flange 54*i* (see FIGS. 1A and 3) on the outer end of the tray bottom 54*e*. Each slide member also includes a side wall 54*j* serving as lateral boundary walls for the paper stacks lodged in the tray.

It can therefore be seen that by suitable manipulation of the upwardly and downwardly movable tray bottom 54*e* and lateral adjustment of the slide members 54*f*, paper of any reasonable length and any reasonable width can be handled.

In the collation operation, as was previously indicated, the individual topmost sheets in each stack are propelled upwardly from the stacks in a timed sequence, and thence are urged forwardly by engagement with the belt run 24 moving in a forward direction. At the end of the belt run 24, the papers are intercepted, as described above, by the plate 30 and are deflected, seriatim, downwardly in the direction of the arrow 35 into the catch bin 45 where they are stopped by the end wall of the bin and accumulate in collated condition.

It will be of course understood that if desired, the collated sheets could be transported away from the machine by substituting a suitable conveyor system for the catch bin. The collated sheets in this instance would customarily be led to a stitching or stapling machine. This substitution, being obvious to one skilled in the art, is neither described in further detail nor illustrated in the drawings.

With particular reference to the paper-engaging mechanism 84 (see FIGS. 3 and 6) it can be seen that a pair of strong, substantially vertical posts 84*a* is provided. On their lower ends the posts carry washers 84*b* disposed within a pair of corresponding U-shaped longitudinal channels 88, on opposite sides of the framework, the post washers 84*b* being adjustably clamped in the channels by appropriate fasteners, such as wing nuts 84*c*.

The two longitudinal, U-shaped-in-section channels 88 form the fore and aft components of a carriage 101 reciprocably translatable in a fore and aft direction. The carriage includes adjacent each end of a pair of transverse tubular members 102 connecting the fore and aft channels. To afford mobility to the carriage a pair of antifriction type wheels 103 on the ends of the cross members 102 run in a pair of fore and aft tracks 104 supported on angle irons 106 carried by the framework 13 on each side thereof.

Reciprocating movement of the carriage is provided by an electrically driven propulsion unit 112 (see FIGS. 1A and 6) comprising an electric motor 113 with a combined switch and

motor control unit **114** affording variable speed as well as on-off capabilites. The motor drives a speed reducer **116** which moves an endless chain **117** driving a sprocket **118** mounted on a transverse, interrupted shaft **119** journaled in bearings **121**.

The central portion of the shaft **119** is interrupted by, or has inserted therein, a crank mechanism **123** including a pair of crank arms **124**, a crank pin **125** journaled on the arms, a connecting rod **126** journaled at one end on the pin, and a journal bearing **127** connecting the other end of the rod **126** to the transverse tubular member **102**.

The throw of the crank arms **124** is such that in each cycle, the carriage **101** moves the appropriate distance in a fore and aft direction, carrying with it the paper-engaging members **81**—**86**.

Referring particularly to the paper-engaging member **84**, the upper ends of the substantially vertical, adjustably tiltable pair of posts **84***a* are threaded as at **84***d* to receive a pair of nuts **84***e* clampingly engaging an interposed bracket **84***f*. The bracket extends forwardly and has pivotally mounted thereon an arm **84***g* for movement in a vertical plane.

As previously noted, there is a pair of posts **84***a* upstanding from opposite sides of the carriage. Accordingly, there are also two arms **84***g* pivotally mounted on the post brackets **84***f*. Between the upper ends **84***h* of the two arms **84***g* there is mounted a transverse pusher bar **84***i* having disposed thereon a pair of elongated sleeves **84***j* preferably of an elastomeric material affording a substantial coefficient of friction (see FIG. **6**).

As reciprocation of the carriage occurs, the two vertical posts **84***a* partake of the same motion, carrying with them the two vertically swingable arms **84***g*, and the transverse pusher bar **84***i* carrying the long friction members **84***j*.

The movements of the paper-engaging friction members **84***j* are shown diagrammatically in FIG. **8**. In initial position, with the carriage **101** in rearmost location (as in FIG. **1**A), the member **84***j* is well removed from the rear of the paper stack **64**. However, as the carriage moves forwardly, i.e. in a left-hand direction in FIGS. **1**A and **8**, as indicated by the arrow **141**, the member **84***j* reaches the paper-engaging location indicated by the numeral **142**.

At this juncture, the topmost sheet of paper is frictionally engaged by the member **84***j* and as the carriage continues to move ahead, the member **84***j* starts up the face of the paper stack **64**, frictionally urging the topmost sheet upwardly at the same time. Upward movement of the member **84***j* is indicated by the arrow **143** and upward movement of the topmost sheet of paper by the arrow **144** (see FIG. **8**). It is to be noted that the upper margin of the topmost sheet, thus displaced, after moving but a short distance, first encounters the lower run **24** of the paper-propelling belt, being thereby bent toward the left, as in FIG. **8**, and directed between the belt and the subjacent roller **40**. At this juncture, the rapidly moving belt **24** quickly seizes control of the topmost sheet and rapidly impels it toward the left. The sheet skims over the top of the recurved top portion **73***d* of the lowered deflection plate **73**, thence onwardly over the series of alternating rollers **40** and remaining top portions **72***d* and **71***d* until the deflector plate **30** (see FIG. **1**B) directs the sheet downwardly into the catch bin **45**. The topmost sheet of each stack is concurrently thus handled and is propelled forwardly in a partially overlapped and collated position.

Referring again to FIG. **8**, it can be seen that at approximately the same instant the upper margin of the dislodged sheet is seized by the rapidly moving belt run **24**, the paper-engaging member **84***j* has reached the upper limit of its movement, as indicated by the reference numeral **146**, the carriage **101** having at this juncture stopped and commenced to return to its base position.

As the carriage starts its return movement, the post **84** also moves rearwardly and, concurrently, the friction member **84***j* is carried rearwardly toward its base position adjacent the rearward paper rack **55**.

It is to be noted that as the friction member **84***j* starts to move rearwardly away from the underlying paper (i.e. away from the new topmost sheet) it also tends to drop downwardly, by gravity, since the arms **84***g* are pivotally mounted on the brackets **84***f* for movement in a vertical plane. There is very little, if any, downward frictional force exerted on the underlying paper, however, since the carriage **101** accelerates rather quickly in a direction carrying the member **84***j* away from the paper.

Where, on the other hand, the carriage completes its cycle and again carries the paper-engaging member **84***j* into contact with the topmost sheet, the carriage is traveling at a considerable velocity. In the interests of smoothing and quieting the operation of the device, as well as compensating for different types of paper, mechanism **184** is provided for supporting the member **84***j* at various angles. Such mechanism includes a pair of rods **184***a* adjustably clamped by wing nuts **184***c* (see FIG. **3**) on the two U-shaped channels **88** on opposite sides of the carriage **101**.

There are a pair of rods **184***a* for each pair of posts **84***a* and each such rod **184***a* is individually, selectively tiltable, clamping at the desired angle being effected by the corresponding wingnuts.

The top **184***b* of each of the rods is bifurcated, and the "Y" or yoke at the top of the rod serves as a rest, or support, for the corresponding arm **84***g*.

The yoke **184***b* serves also as a fulcrum so that by tilting the fulcrum rod **184***a* toward or away from the corresponding post **84***a*, the point at which the arm **84***g* is supported can be varied. So also, as can be seen, still other variations are possible by appropriately tilting the post **84***a* relative to the fulcrum rod **184***a*.

FIGS. **3** and **8**, for example, illustrate various relative postures which are available to adapt the operation of the machine to handle papers of a wide variety of kinds, sizes, textures and characteristics.

For relatively stiff sheets, or for paper stock of considerable weight, best operation is attained by setting the arms, for example, the arms **85***g* (see FIG. **3**), at a relatively low angle so that as the carriage moves ahead, the friction member **85***j* very firmly encounters the corresponding topmost sheet of paper, the slight upward angle of the arms **85***g* affording a vertical impact component tending to dislodge the topmost sheet so that as the paper-engaging member **85***j* moves up the face of the incline, only a single sheet, i.e. the topmost one, is pushed ahead of it.

For somewhat thinner paper stock, an intermediate arm setting is desirable, for example that illustrated in FIG. **3** and designated by the reference numeral **86***g*. In this case, the initial impart against the stack is at greater departure from the more perpendicular angle of the previously described arm **85***j*.

For very thin stock, such as onion skin paper, for example, the arm is arranged so that it is at quite a steep angle as is the arm **84***g*. In this case, initial impact is fairly slight although a very substantial vertical lift, or vertical dislodging, component is afforded. The frictional force exerted on the topmost sheet is quite small since the arm **84***g* is very readily lifted out of its seat (the Y-shaped fulcrum **184***b*) as the friction member **84***j* comes into contact with the paper and starts to urge the sheet upwardly through the predetermined distance.

For many collating jobs, the fulcrum rods (see FIG. **3**) could be clamped permanently in the upright attitude of the rods **185***a* and **186***a*, for example, in which case only the posts **85***a* and **86***a* would need adjusting by tilting them in such a manner as to position the paper-engaging elements properly. In other cases, the fulcrum rod would also be tilted as in **184***a*.

In order to assist the operator in setting the posts to the proper position, indicia **161** (see FIGS. **3** and **9**) are provided adjacent the wingnut serving to clamp the post at a desired angle. For example, a left hand inclined line is designated by the letter "S" and indicates a soft setting, or a setting for soft, thin paper whereas the right inclined hand line is designated by the

letter "H" and refers to a hard setting, or a setting for hard, stiff paper stock. An intermediate vertical line, unmarked, serves to indicate medium weight or for paper of average characteristics. By loosening the wingnut **85***c*, for example, and inclining the post **85***a* until it is substantially colinear with the "H" line, followed by tightening the wingnut **85***c*, the post **85***a* will assume the angle shown in FIG. 3 and the arm **85***g* will automatically take the low angle shown, which is appropriate for stiff, heavy paper, such as a front or back cover sheet of a publication.

As a matter of interest, it will be noted, with especial attention to FIG. 5, that when the paper trays have been substantially emptied of their contents, the cross rod **86***i* will commence to ride on the tops of the rack lips **56***a* before the friction member **86***j* engages the subjacent tray **56***b*. By so protecting the friction member, its efficiency and life is greatly increased.

It can therefore be seen that I have invented a combined paper assembling and collating apparatus which can readily be interchanged to afford either desired mode of operation, and which is of unusual flexibility in that the paper handling components can be adjusted with facility to meet the demands of a wide variety of paper stock sizes, textures, compositions and weights.

I claim:

1. A collating machine comprising:

a. an elongated framework extending from a forward end to an after end and including a top, a bottom and a pair of sides;

b. a plurality of transverse, parallel, paper-supporting racks carried by said framework, said racks being inclined in a forward and upward direction;

c. a plurality of paper-engaging members each transversely oriented and located to the rear of a corresponding one of said racks, each member being movable from a first position removed from a stack of paper sheets supported on said corresponding one of said racks, to a second position in engagement with the topmost sheet of said stack, to a third position a predetermined distance in said forward and upward direction from said second position, said member being effective to move said topmost sheet in said forward and upward direction through said predetermined distance;

d. reciprocating means carried by said framework for cyclically moving said paper-engaging members between said first, second and third positions;

e. an endless belt movably mounted on said top of said framework, said belt including a longitudinally oriented lower run in close juxtaposition to the upper ends of said paper-supporting racks for frictionally engaging and longitudinally propelling a sheet of paper in contact with said belt;

f. means for selectively moving said lower run of said belt toward said forward end of said framework or toward said after end thereof; and,

g. conveyor means connecting a reproduction apparatus to a location adjacent said forward end of said framework in close proximity to the forward end of said lower run of said belt, said conveyor means being effective to transport paper sheets emerging from the reproduction apparatus into engagement with said lower run of said belt; and wherein said belt moving means is driven in a direction such as to propel the sheets toward said after end of said framework.

2. A machine as in claim 1 further including adjustable means on said framework for selectively deflecting the sheets propelled by said belt toward said after end of said framework, said deflecting means being capable of directing the sheets downwardly and rearwardly away from said belt and onto a predetermined one of said paper-supporting racks.

3. A machine as in claim 2 wherein said paper-deflecting means includes a plurality of transverse plates, each pivotally mounted adjacent its upper end of said framework and extending along said upper end of a corresponding after one of said paper-supporting racks, each of said plates including a forward projection; and means for selectively positioning said plates in either of two attitudes, a first attitude wherein said projection is substantially parallel and in close juxtaposition to said lower run of said belt and effective to support sheets of paper propelled thereby, and a second attitude wherein said projection is inclined forwardly and upwardly and is effective to intercept sheets of paper propelled by said belt in a rearward direction and to deflect the intercepted sheets downwardly onto a subjacent forward one of said paper-supporting racks.