Nov. 27, 1956 F. J. SMITH 2,771,950

SNAP-OUT FORM SEPARATOR

Filed Aug. 6, 1952 5 Sheets-Sheet 1

FIG. 1

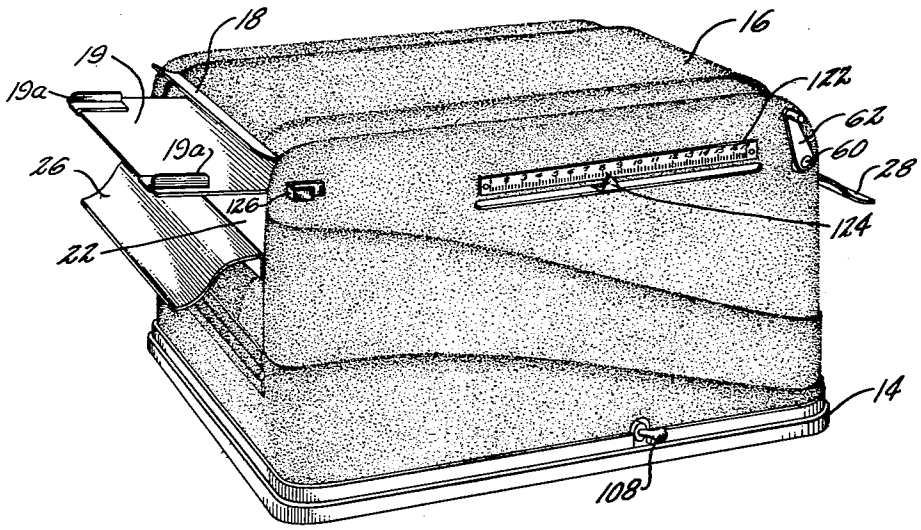
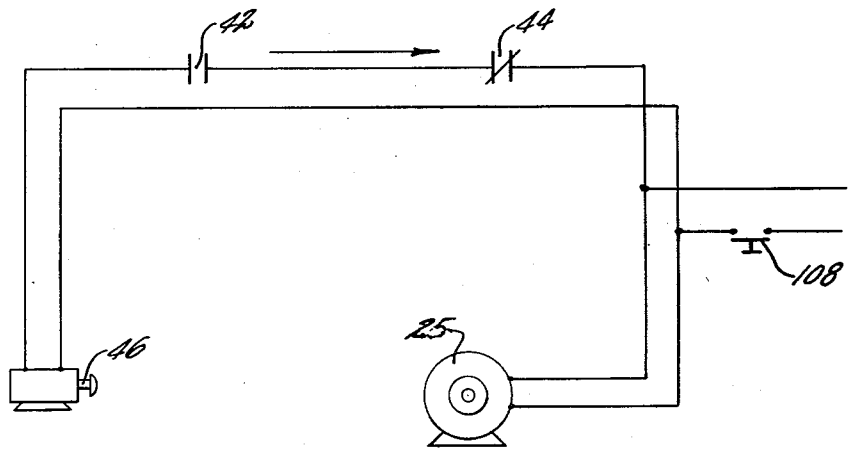


FIG. 13



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SNAP-OUT FORM SEPARATOR

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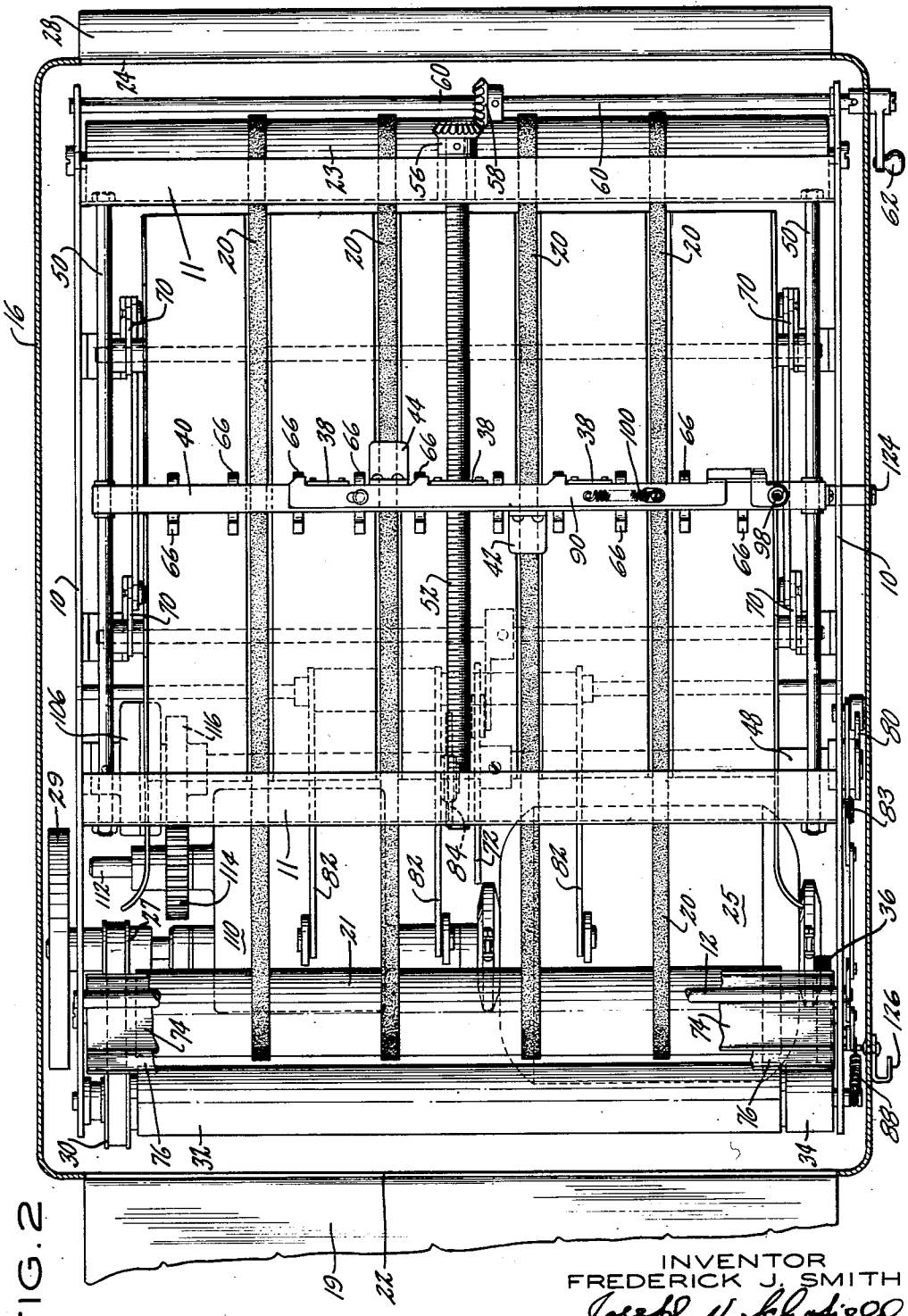

FIG. 2

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SNAP-OUT FORM SEPARATOR

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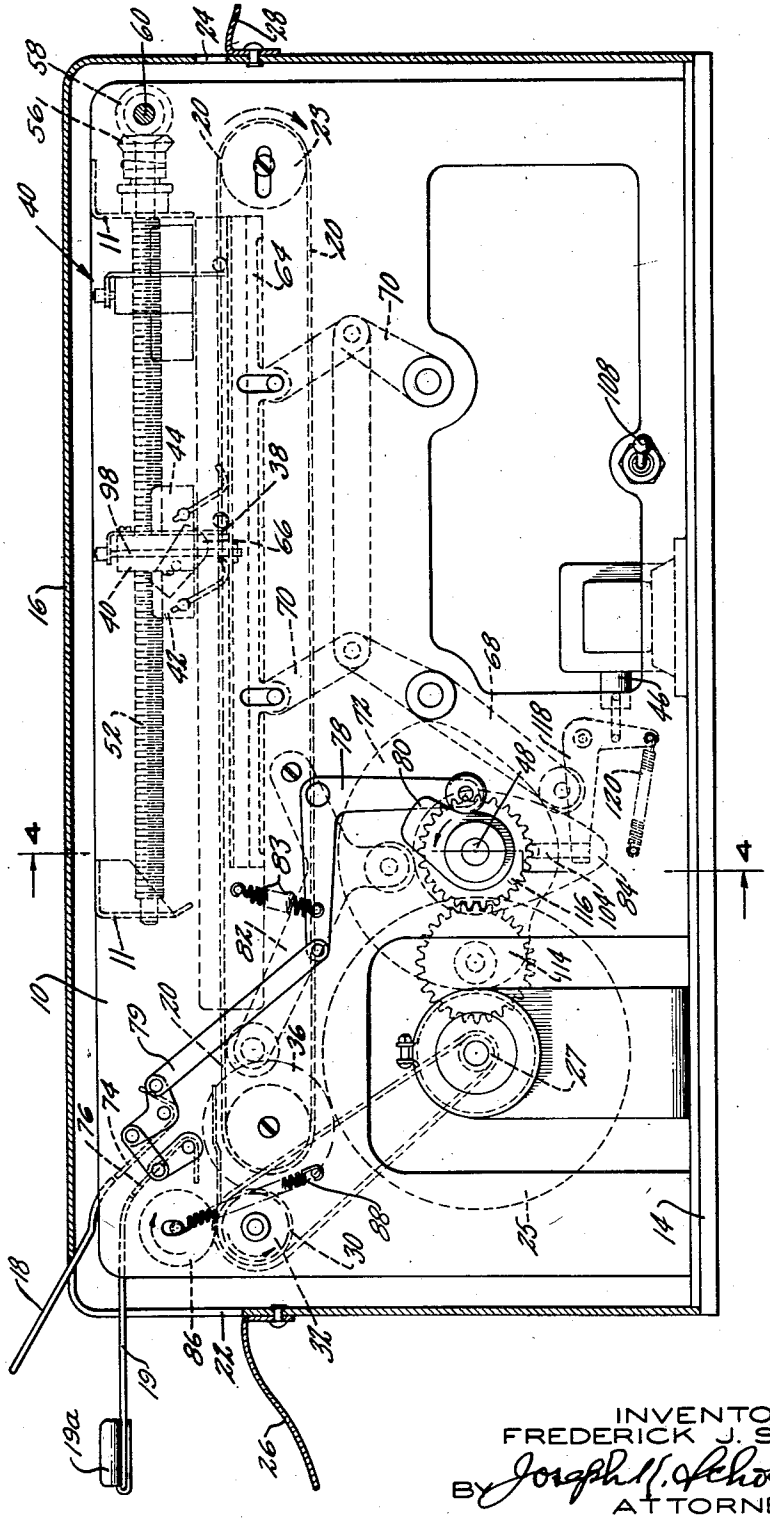

FIG. 3

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SNAP-OUT FORM SEPARATOR

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FIG. 4

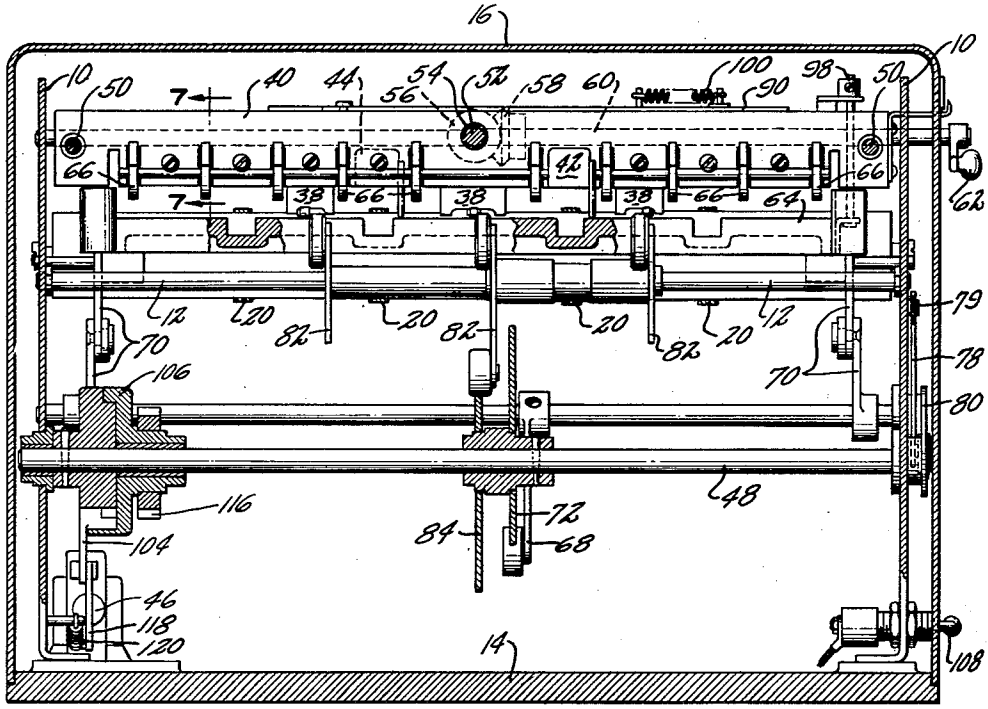


FIG. 5

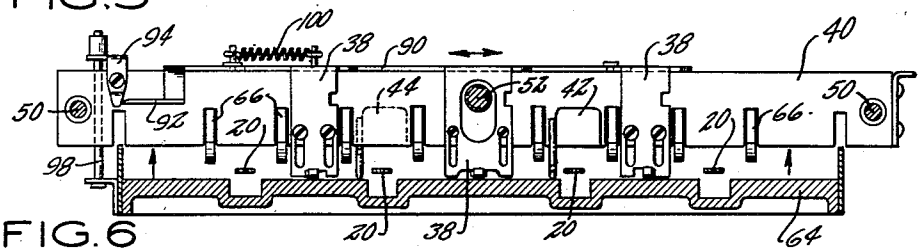


FIG. 6

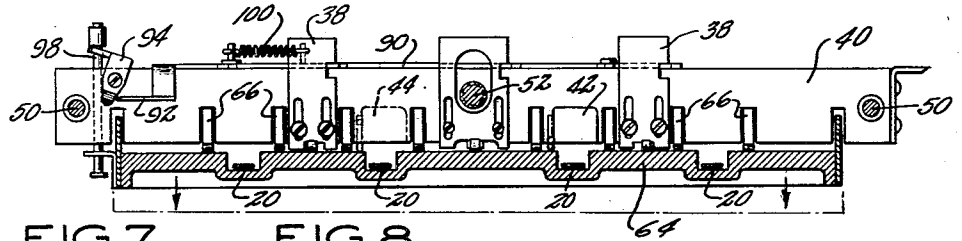


FIG. 7

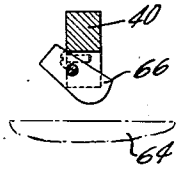
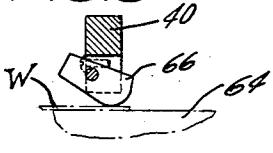


FIG. 8



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SNAP-OUT FORM SEPARATOR

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FIG. 9

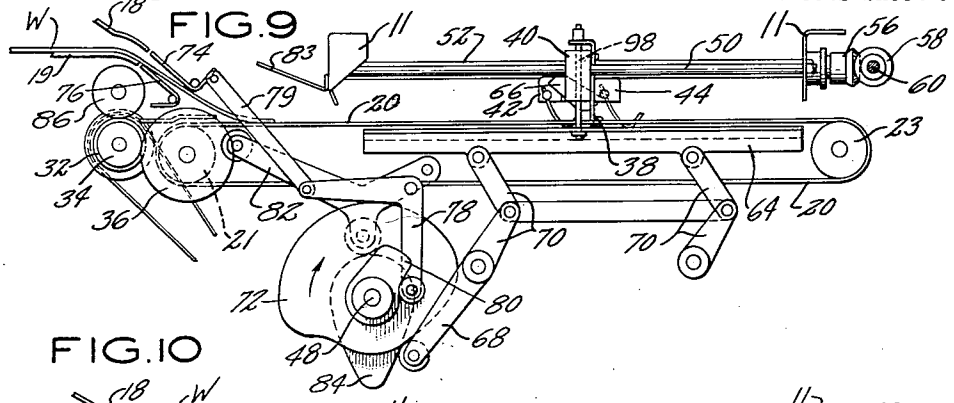


FIG. 10

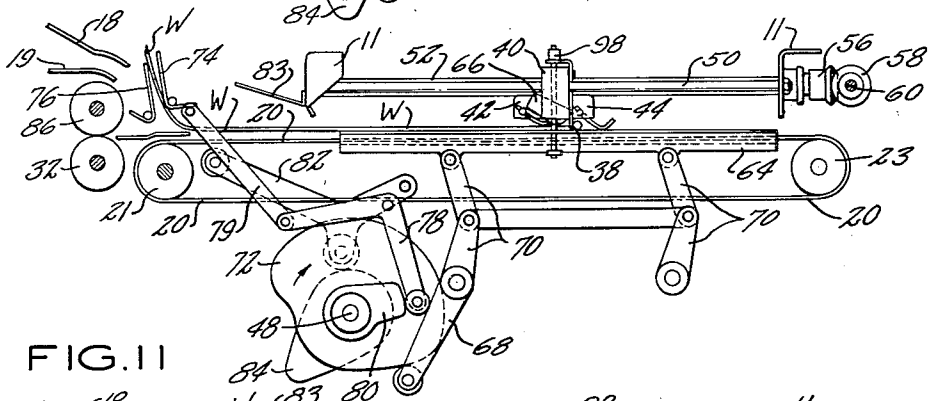


FIG. 11

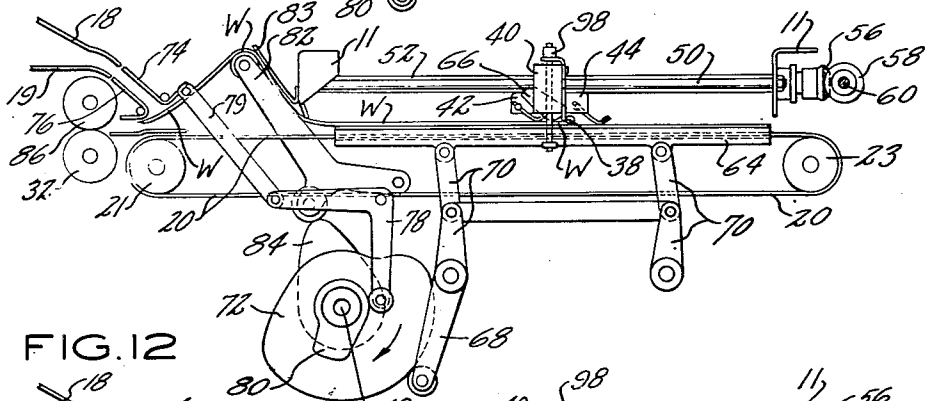
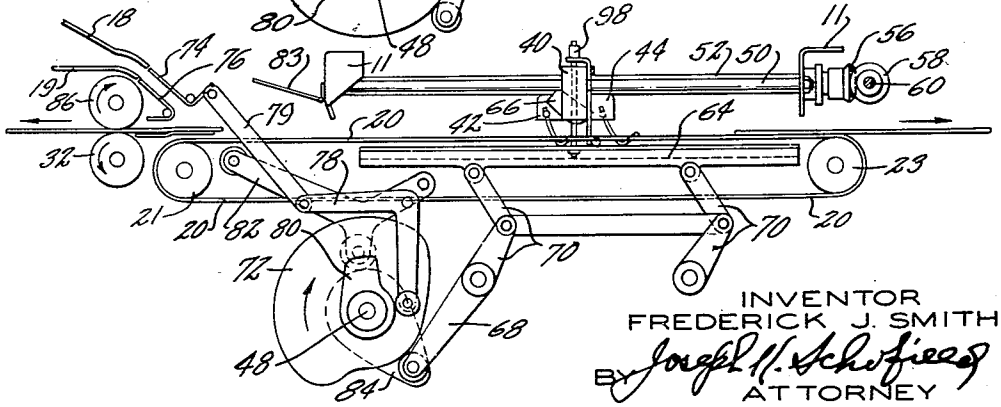


FIG. 12



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United States Patent Office 2,771,950 Patented Nov. 27, 1956

2,771,950

SNAP-OUT FORM SEPARATOR

Frederick J. Smith, Newington, Conn., assignor, by mesne assignments, to Anthony G. Warnes, West Hartford, Conn.

Application August 6, 1952, Serial No. 302,935

16 Claims. (Cl. 164—84.5)

This invention relates to a device for separating form sheets from a group of interleaved form sheets and carbons attached at one end to a header, the assembled forms and carbons being commonly known as a "snap-out" form.

More particularly the invention relates to a device for effecting this snapping out or separating operation while the snap-out form, after being typed, is traversed through the device by suitable means, and after being clamped at one end, and having its opposite end brought into contact with rotating gripping rolls, the form sheets are severed from the assembled form sheets and carbons and ejected from one end of the device, the carbon sheets and header being simultaneously ejected from the opposite end by continued movement on said traversing means.

A primary object of the invention is to provide a compact, efficient separating device for snap-out forms or assemblies adapted for operating over a wide range of sizes and types of forms to separate snap-out forms into their component form sheets and header, with the interleaved carbon sheets still attached to the header.

Another object of the invention, after inserting the snap-out form into a suitable opening at one end of the device, is to advance the form by traversing means into contact against a stop, the position of which may be manually adjusted for different lengths of forms, first clamping the leading end of the form, then guiding the opposite end of the snap-out form so that its trailing edge will be brought into contact with rotating gripper rolls which will pull this end of the form while the front end is firmly gripped and separate the form sheets from the header and carbon sheets.

A feature of advantage of this separating device is that the clamping means for the leading edge of the assembly comprise freely oscillatable members against which the upper surface of the leading edge of the form is brought by movement upward of a table, retrograde movement of the form by engagement of its trailing edge with the rotating rollers then serves to bind the oscillating members against the form sheets to securely clamp this forward edge until the table is moved downward.

Another object of advantage of the invention is that prior to the clamping of the leading end of the snap-out form the opposite or trailing end is bent into such a shape that the individual sheets will be "fanned" and the leading end clamped with the sheets in that position, so that when the trailing end is engaged by the gripping rollers, the sheets will be individually and successively severed. As soon as the bending or fanning operation has been completed, engagement of the forward end of the snap-out form between gripping members and the upper surface of a vertically movable table is effected and the opposite end is then guided into contact, while substantially in flat form, with the rotating gripper rollers to sever the form sheets from the header and carbons.

Another object of the invention is to coordinate the operation of the elements forming the movable members of the device in accordance with a predetermined automatic cycle, preferably by successively operated cam actuated members, the cams being mounted on a single shaft which makes but one complete revolution for a complete cycle of operation of the machine so that the form, after having its parts separated by a single rotation of the cam shaft, will have the parts ejected and the rotation of the cam shaft stopped with the movable members in position to receive a new snap-out form.

With the above and other objects in view, the invention may include the features of construction and operation set forth in the following specification and illustrated in the accompanying drawings.

In the drawings:

Figure 1 is an outside perspective view of a snap-out form separating device made according to the present invention and shown enclosed within a suitable casing.

Fig. 2 is a plan view of the operative mechanism of the device with the casing broken away.

Fig. 3 is a side elevation of the device shown in Fig. 2 with the casing broken away and showing the mechanism in one of its operative positions.

Fig. 4 is a vertical cross sectional view taken on the plane of line 4—4 in Fig. 3.

Fig. 5 is a fragmentary view of portions of the mechanism shown in Fig. 4, the view being taken from the rear of the device.

Fig. 6 is a view similar to Fig. 5 with the form supporting table in its elevated position.

Figs. 7 and 8 are detail sectional views showing the oscillating gripping members on the carriage for clamping the forward edge of the snap-out form, the gripping members being shown in positions relative to the surface of the vertically movable form supporting table, the section being taken on the plane of line 7—7 in Fig. 4.

Figs. 9, 10, 11 and 12 show successively different rotative positions of the cam shaft and its cams and the relative positions of the operative members at different points during the rotation of the cam shaft and cycle of operation, and

Fig. 13 is a diagram showing the electrical circuit for the clutch operating solenoid and the switches in the circuit operated by contact with the form being separated.

In the above mentioned drawings, there has been shown but one embodiment of the invention which is now deemed preferable, but it is to be understood that changes and modifications may be made within the scope of the appended claims without departing from the spirit of the invention.

Briefly, and in its preferred aspect, the invention may include the following principal parts: First, a frame supporting the operative parts of the device; second, traversing means for the form being operated on: third, a stop or abutment for the form adjustable for various lengths; fourth, gripping means mounted on the abutment for the advanced edge of the form; fifth, a vertically movable table for the form; sixth, closely adjacent constantly rotating rolls in the frame; and seventh, means to guide the trailing edge of the form between the rotating rollers.

In the embodiment of the invention selected for illustration, the form is placed within a guideway formed by upper and lower guide members at one end of the device and is advanced to travelling bands within the device with its free edges in the leading position. The header or trailing edge, after the leading free edge of the form is clamped, is guided into position to enter the space between adjacent rotating rollers and the header with the carbons attached thereto is ejected from the device by the rotation of the rollers. Movement of a table within the device upward effects engagement of the leading free edge of the form with the gripping members. Bending of the form just prior to the gripping action to fan the form sheets to facilitate severing and the guiding of the

trailing edge between the rollers are actuated in predetermined timed relation to each other and will presently be described more in detail.

Referring more in detail to the figures of the drawing, and first to Figs. 2 and 3, it will be seen that the device comprises two side plates **10** suitably fastened together by tie-rods **12** so that they will be maintained in spaced-apart parallel vertical positions. Surrounding and enclosing these side plates **10**, which support the operative mechanism of the device, is a casing comprising a platform **14** to which the side plates **10** are fastened and on which is mounted a metal or other form of cover **16** as shown in Figure 1. At one end of the cover **16** are fixed guiding members **18** and **19** above and below a suitable opening in the end of the cover so that the snap-out form W may be passed into and through this guideway and engage a number of parallel travelling bands **20** forming a conveyor. Below this guideway formed by the guiding members **18** and **19** is an opening **22** through which a portion of the snapped out form is ejected. At the rear end of the device is another opening **24** through which the remaining parts of the form are discharged. Immediately respectively below the openings **22** and **24** are guiding ledges **26** and **28** for the parts of the form W.

The movable bands **20** forming the conveyor referred to above for advancing the form W are continuously travelling in one direction and are driven by a driven roller **21** at one end of the device over which the bands **20** pass, there being a freely rotatable adjustable take-up or supporting roller **23** at the opposite end of the device to maintain the bands **20** suitably tensioned. The means to continuously drive the roller **21** for the travelling bands **20** comprise a motor **25** the armature of which has a pulley **27** driving a pulley **30** at one end of a roll **32**. At the opposite end of the roll **32** is a friction pulley **34** engaging a driven pulley **36** secured to the roll **21** over which the bands **20** pass and are driven.

When a snap-out form W has been inserted within the guideway between guide **18** and shelf **19** and moved into position to rest on these travelling bands **20**, its forward end will strike against vertically movable abutments **38** on a longitudinally adjustable carriage **40**. To aid in guiding the form W on to the bands **20** side abutments **19***a* are provided adjustably positioned laterally on the guide **19** as required by the particular form being operated on. This advancing movement of the form when its forward end contacts the abutments **38** engages its upper surface with the operating arm of the first of two micro-switches **42** and closes a circuit, a second switch **44** in this circuit beyond the carriage being normally closed at this time. The circuit when closed by the form W passing under the first switch **42** and oscillating its lever, moves the armature of a solenoid **46** to disengage a detent **104** and permit rotation of a cam shaft **48**. This cam shaft **48** and its operative connections will presently be described. On the cam shaft **48** is a single rotation clutch **106** of any standard or preferred form so that when the detent **104** has been withdrawn by the solenoid **46** the shaft **48** can make a single complete rotation.

The adjustable carriage **40** is slidably mounted for movement along fixed parallel rods **50** secured at their ends to parts of the frame. To adjust the carriage an elongated longitudinally extending screw **52** is mounted for rotation within the frame and retained against endwise movement therein. For this purpose angle irons **11** secured to the side plate **10** are provided, there being bearings in the member **11** for supporting the opposite ends of the screw **52**. The screw **52** engages a nut **54** mounted in fixed position within the carriage **40** so that rotation of the screw **52** adjusts the position of the carriage longitudinally along its supporting rods **50** for different lengths of forms. To rotate the screw **52** a bevel gear **56** is secured thereto at one end which meshes with a corresponding gear **58** on a transversely extending shaft **60** mounted within the frame. On the outer end of this shaft is detachably attached a small hand crank **62**. By rotation of the crank **62** the screw **52** may be rotated and the carriage **40** adjusted longitudinally in either direction within the frame for various lengths of snap-out forms.

On the rear face of the carriage **40** are mounted the series of vertically slidable stops or abutments **38** referred to above. These abutments are in the form of small plates having parallel slots extending vertically in their intermediate portions as seen in Figs. 5 and 6. Screws passing through these slots and entering the carriage member limit the upper and lower positions of the abutments **38**. With a table **64** in its lower position as shown in Figs. 4, 5, 9 and 12 and with the form W being advanced by the travelling bands **20**, the leading edge of the form will strike against these aligned abutments **38** and stop further movement of the form. The vertically movable table **64** then moves upward by means presently to be described to contact the grippers **66** as seen more particularly in Figs. 7 and 8. To permit the table **64** to move upward to raise the form from the bands **20** slots are formed in the table to receive the bands **20**.

The micro switches **42** and **44**, as shown in Figs. 9 to 12, are mounted on opposite faces of the carriage **40** and their operating arms extend, as shown, to positions adjacent the surface of the table **64**. The first switch **42** engaged by the form W is normally open and is closed by the form passing under it. The second switch **44** is normally closed so that with a form in position on the travelling bands and with its forward edge against the abutments the circuit is closed and the cycle of operations begins by rotation of the cam shaft **48**. As soon as the snapped portions of the form pass the carriage **40** the second switch **44** is opened by the form W passing under its lever. This prevents re-operation of the detent **104** and prevents another rotation of the clutch **106** until the portions of the form have been ejected from the device.

The first effect of rotation of this cam shaft **48** is to engage the lever **68** of a parallel linkage system **70** with a face cam **72** on the cam shaft **48** so that the table **64** will be raised above the plane of the travelling bands **20** by virtue of the slots provided in the table for the bands to such a position that the forward edge of the snap-out form W will be directly below the grippers **66** on the carriage **40** as shown in Figs. 9, 10 and 11.

Simultaneously with this upward movement of the platform or table **64** to its position shown in Figs. 10 and 11 is an oscillatory movement of a portion of guide forming members **74** and **76**. This movement is effected by a bell crank **78**, one arm of which engages a second cam **80** on the cam shaft **48** and the opposite arm engages a reach arm **79** connected by a small bell crank and link to the movable guides **74** and **76**. A spring **83** normally retains the bell crank **78** in contact with its cam **80**. Movement of these guide members **74** and **76** to the position shown in Fig. 10 bends the trailing edge of the snap-out form W upward. As will be seen in Figs. 9, 11 and 12, the movable guide members **74** and **76** are in alignment respectively with the fixed guide members **18** and **19**. As soon as this bending movement of the trailing end of the form has taken place the upward movement of the table **64** is completed and the grippers **66** pivotally mounted on the carriage **40** are moved to the position shown in Fig. 8 ready to clamp and restrain retrograde movement of the form W.

While the movable guide members **74** and **76** are in their oscillated position, several spaced pivotally mounted arms **82**, by an extension of one of them engaging a third cam **84**, are raised from below the snap-out form W adjacent its trailing end to withdraw the trailing edge of the form from between the movable members **74** and **76** of the guideway. When the trailing end of the form

W is free from the movable guiding members 74 and 76, the arms or levers 82 are lowered, which permits the trailing end of the form to enter between gripper rolls 32 and 86. The upper roll 86 is driven by contact with roll 32 and is resiliently maintained in contact with the driven roll 32 by springs 88 at opposite ends of the roll 86.

Clamping of the forward edge of the form W by members 66 against the upper surface of the table 46 takes place while the arms 82 hold the trailing portions of the form in bent form as shown in Fig. 11. The forward edges form sheets are therefore "fanned" at the time they are gripped and the remaining parts separated by the rollers 32 and 86. These gripper rolls 32 and 86 are constantly rotated and force the separated portion of the snapout form toward the left, as seen in Figs. 9 to 12, as soon as the trailing edge of the form W is engaged between them.

The free or leading edges of the form sheets W are still held gripped between the oscillating gripper members 66 and the table 64 as the header and carbon sheets are separated from the form sheets by being pulled between the rotating rollers 32 and 86. The table 64 is then permitted to move to its lower position by the first cam 72 to free the leading edge of the form from the grippers 66 and again contact the form sheets with the travelling bands 20. These bands 20 then advance the separated form sheets, as shown in Fig. 12, toward the right. The header and carbon sheets being engaged by the gripping rollers 32 and 86 as they are being severed and are forced, as shown in this figure, toward the left.

When the table 64 reaches its uppermost position the stop plates or abutments 38 are locked in their upper position. For this purpose a transversely mounted plate 90 is provided on the upper surface of the carriage 40 so that it may have but limited movement. In the position of the parts shown in Fig. 5 (which is a rear view) the plate 90 is held in its right-hand position by a finger 92 on the plate 90 engaging a movable abutment 94 at one end of the carriage 40. The table 64, as shown in this figure, is in its lower position. The abutment 94 is pivoted about a screw on the carriage shown in Figs. 5 and 6 and engages with a vertically movable headed bar 98 in the position shown in Fig. 5. The finger 92 engaged by this abutment 94 forces the plate 90 toward the right. As soon as the table 64 reaches its upper position the rod 98 on the carriage 40 is permitted to rise to release the pivoted abutment 94 and permit a spring 100 to move the plate 90 to the left. This movement of the plate 90 engages projections thereon with notches in the sides of the vertical stop plates 38 so that the stop plates will be held in their upper position until the table 64 has moved to its lower position. As soon as the table 64 reaches its lower position the rod 98 is forced downward by its lower head engaging a bracket on the carriage to oscillate the pivoted abutment 94 and force return of the transversely movable plate 90 to its right-hand position against pressure of its spring 100. As soon as the transversely movable plate 90 is returned to its initial position, or right-hand position, the stops 38 can again drop to their lower position ready to abut against the next form W when advanced by the travelling bands 20.

The grippers 66 for the forward edge of the form W, as shown in Figs. 7 and 8, are pivotally mounted on horizontal pins in the carriage 40. With the table 64 in its lower positions of its movement the grippers assume the position shown in Fig. 7 but as the table 64 reaches its uppermost position and the leading edge of the form W passes below the grippers 66 they are tilted to the position shown in Fig. 8. In this tilted position any retrograde movement of the form W tightly wedges the form sheets between the grippers 66 and the surface of the table 64. As the grippers 66 engage the form sheets beyond the edges of the interleaved carbon sheets, the header with the carbon sheets attached, after severing of the form sheets, are free to move to the left.

Fig. 9 shows the cams 72, 80 and 84 and their actuated members in their respective positions as a form is being manually placed in the guideway between fixed guide members 18 and 19 and on to the travelling bands 20. Fig. 10 shows a second operative position in which the form W after having advanced to a position in which the forward end is engaged by the stops 38 on the adjustable carriage 40 and with the first or normally open switch 42 moved by the form passing below its lever to its circuit closing position. It is at this point in the movement of the form that the cycle of operation starts and that the table 64 begins its movement to its uppermost position. The movable guiding members 74 and 76 then oscillate and complete their movement to the position also shown in Fig. 10. The arms 82 then move upward to bend the form W, as shown in Fig. 11, to successively fan the sheets as they are being gripped. As the upward movement of the arms 82 is completed, the movable guide members 74 and 76 are lowered to their initial position and the arms 82 are lowered. The trailing edge of the form then has been withdrawn by the arms 82 from the guide members 74 and 76 and as lowering of the arms is completed and the form resumes its substantially flat condition, the trailing edge is guided as shown in Fig. 11 into engagement with and is caught by the rotating rollers 32 and 86. With the grippers 66 clamping the forward ends of the form sheets, the rollers 32 and 86 sever the header and carbons from the form sheets and eject the header and carbons from the left-hand end of the device as seen in Figs. 9 to 12. When the table 64 again moves toward its lower position, the form sheets are released from the grippers 66 and rest on and are again advanced by the travelling bands 20 to the right-hand end of the device. The vertically movable abutment members 28 are retained in their raised position as previously described until the table 64 has completed its downward movement and the horizontally movable latching member 90 for these members has been moved to the right to permit these abutment members 38 to drop. By this time the form sheets have been moved to their ejecting position at the right-hand end of the device. From this end of the device they are discharged through the opening 24 provided at this end of the device.

The cycle of operations of the device for a single snap-out form is thus brought to a close with the operative parts in proper position to start another cycle as soon as another form is introduced within the guideway between members 18 and 19 to the travelling bands 20 and is advanced by the travelling bands to a position against the abutment members 38 and to operate and close the first switch 42.

The power for operating the movable members of the device as stated above is obtained from a small motor 25 housed within the casing 16 and mounted in fixed position on the base or platform 14. This motor 25 is constantly rotating when the device is in operation, a snap switch 108 being provided at one side of the casing 16 for starting and stopping the motor. The motor 25 has a pulley 27 on its armature shaft drivingly connected by belt to a larger one 30 on the end of a transverse roller 32, the opposite end of this roller 32 has a small rubber roller 34 which drives a roller 36 mounted directly on the transverse shaft over which travel the spaced bands 20 for advancing the forms through the device. As the load on the motor 25 is very variable and intermittent it has been found desirable to place a heavy fly-wheel 29 thereon at one end as shown in Fig. 2. Connected also directly to the armature shaft of the motor 25 is a speed reducing unit 110 of conventional type having on its output shaft 112 a gear 114. This gear 114 is constantly rotating and drives a gear 116 on the cam shaft 48 at a greatly reduced speed. The one-revolution clutch 106 as shown is interposed drivingly be-

tween the gear 114 and the cam shaft 48 so that except when detent 104 is operated by solenoid 46 the cam shaft 48 is not rotated. As this single revolution clutch forms no part of the present invention, further description of its operation is not thought to be necessary. It may be stated, however, that the detent 104 for controlling rotation of the cam shaft 48 is operated by solenoid 46. The solenoid is energized by closing of its circuit and moves the detent to a releasing position. As soon, however, as the solenoid is deenergized the detent 104 is returned to its engaging position to stop rotation of the cam shaft at its initial position after completion of a single rotation.

With the cam shaft 48 disengaged from its driving connection with the rotating shaft, no rotation of the cam shaft 48 takes place and the only moving parts are the travelling bands 20 and the gripping rollers 32 and 86. When the solenoid 46 oscillates its bell crank 118 against pressure of spring 120 and withdraws or rotates detent member 104 of the one-revolution clutch 106 the cam shaft 48 then starts rotation and continues only until one complete revolution has been effected.

On this cam shaft are three different cams 72, 80 and 84 secured in fixed angular positions thereon to effect movement of their members in their predetermined order. The successive positions of the cams at different points in the cycle of operations is shown in Figs. 9, 10 and 12. One cam 72 raises the table 64 above the level of the travelling bands 20 and retains the table in elevated position until the severing operation is complete. Cam 72 then returns the table to its lower position. Cam 80 at the proper time oscillates the movable guide members 74 and 76. Cam 84 elevates the arms 82 to bend the form and withdraw the form from the guide members.

To aid in the adjustment of the carriage 40 for the different lengths of form W a scale 122 may be provided on the side of the cover 16. Along this scale operates a pointer 124 secured to and movable with the carriage 40 on which the abutments 38 are mounted. By operating the crank 62 the carriage 40 may be moved to any adjusted position and its position determined by the position of the pointer 124 for different lengths of forms. For convenience a small metal stop 126 also may be mounted on the case 16 so that by placing one edge of the form W against this stop and adjusting the carriage 40 until the pointer 124 is in alignment with the opposite edge of the form W the device will be in proper adjustment for that particular length of form.

I claim as my invention:

1. A device for separating form sheets from a snap-out assembly comprising, a transverse abutment on said device, traversing means to advance said assembly against said transverse abutment to stop the advancing movement of said assembly, gripping means on said transverse abutment to engage the forward edge of said assembly, means to momentarily bend the intermediate portion of said assembly, a pair of closely adjacent rotating rollers, guiding means to present the trailing edge of said assembly between said rotating rollers when released by said bending means to sever the form sheets from said assembly, whereby one portion of said assembly will be ejected by said rollers, and means to release the forward edge of said assembly from said gripping means, whereby the remaining portions of said assembly will be ejected by said traversing means.

2. A device for separating form sheets from a snap-out assembly comprising, a transverse abutment on said device, traversing means to advance said assembly against said transverse abutment to stop the advancing movement of said assembly, gripping means on said transverse abutment to engage the forward edge of said assembly, cam actuated means to momentarily bend the intermediate portion of said assembly, a pair of closely adjacent rotating rollers, guiding means to present the trailing edge of said assembly between said rotating rollers when released by said bending means and while its forward edge is in gripping position to sever the form sheets from said assembly, whereby one portion of said assembly will be ejected by said rollers, and means to release the forward edge of said assembly from said gripping means, whereby the remaining portions of said assembly will be ejected by said traversing means.

3. A device for separating form sheets from a snap-out assembly comprising, an abutment within said device, traversing means to advance said assembly against said abutment, gripping means on said abutment to engage the forward edge of said assembly, cam means to raise said assembly into gripping position, means to momentarily bend the intermediate portion of said assembly, a pair of closely adjacent rotating rollers adjacent one end of said device, guiding means to present the trailing edge of said assembly between said rotating rollers when released by said bending means and while said assembly is in gripping position to sever the form sheets from said assembly, whereby one portion of said assembly will be ejected at one end by said rollers, and means to release the forward edge of said assembly from said gripping means, whereby the remaining portions of said assembly will be ejected by said traversing means at the opposite end of said device.

4. A device for separating form sheets from a snap-out assembly comprising, an abutment within said device, traversing means to advance said assembly against said abutment, gripping means therein to engage the forward edge of said assembly, a vertically movable table for said assembly to raise said assembly above said traversing means into gripping engagement against said abutment, means to momentarily bend the intermediate portion of said assembly, a pair of closely adjacent rotating rollers, guiding means to present the trailing edge of said assembly between said rotating rollers when released by said bending means and while the forward edge is gripped to sever the form sheets from said assembly, whereby one portion of said assembly will be ejected by said rollers, and means to lower said table to again engage the assembly with said traversing means and release the forward edge of said assembly from said gripping means, whereby the remaining portions of said assembly will be ejected by said traversing means.

5. A device for separating form sheets from a snap-out assembly comprising, a transverse abutment within said device, traversing means to advance said assembly against said transverse abutment to stop the advancing movement of said assembly, gripping means on said transverse abutment to engage the forward edge of said assembly while the forward edge of said assembly is in contact with said abutment, means to momentarily bend the intermediate portion of said assembly, a pair of closely adjacent rotating rollers, guiding means to present the trailing edge of said assembly between said rotating rollers when released by said bending means and while the forward edge is being gripped to sever the form sheets from said assembly, whereby one portion of said assembly will be ejected by said rollers, means to release the forward edge of said assembly from said gripping means, and reposition said assembly on said traversing means, whereby the remaining portions of said assembly will be ejected by said traversing means.

6. A device for separating form sheets from a snap-out assembly, traversing means for said assembly, an adjustable abutment within said device adjacent the traversing means, a cam operated table to move said assembly vertically into gripping position against members of said abutment, means to sever said form sheets from said assembly while the forward edge for said assembly is in its gripped position, said cam lowering said table after the form sheets have been severed to again engage the unsevered portion of said assembly with said traversing means, whereby said unsevered portion will be ejected from the device by said traversing means.

7. A device for separating form sheets from a snap-out assembly, traversing means for said assembly, an adjust-

able abutment within said device adjacent the traversing means, a cam moved table to elevate said assembly into gripping position between said table and members on said abutment, means to force said form sheets in a retrograde direction to sever said form sheets from said assembly while the table is in its elevated position, said cam lowering said table to again engage the unsevered portion of said assembly with said traversing means, whereby said unsevered portion will be ejected from the device by said traversing means.

8. A device for separating form sheets from a snap-out assembly, traversing means for said assembly, an adjustable abutment within said device adjacent the traversing means, a cam moved table to elevate said assembly into gripping position between said table and members on said abutment, means to sever said form sheets from said assembly while the forward edge of said assembly is in its gripped position, said severing means comprising adjacent rotating rollers engaging and forcing said form sheets in a retrograde direction, said cam lowering said table to again engage the unsevered portion of said assembly with said traversing means, whereby said unsevered portion will be ejected from the device by said traversing means.

9. A device for separating form sheets from a snap-out assembly, traversing means for said assembly, an adjustable abutment within said device adjacent the traversing means, a cam movable table to elevate said assembly into gripping position against members on said abutment, rotating rollers engaging the trailing edge of said assembly while the forward edge thereof is in gripping position, said cam lowering said table after said form sheets have been severed to again engage the unsevered portion of said assembly with said traversing means, whereby said unsevered portion will be traversed through the device and ejected from the device at the opposite end of the device from the form sheets.

10. A device for separating form sheets from a snap-out assembly, traversing means for said assembly, an adjustable abutment within the device adjacent the traversing means, a cam moved table to elevate said assembly into gripping position between said table and members on said abutment, rotating rollers within said device, means to guide the trailing edge of said assembly into engagement with said rollers to sever said form sheets from said assembly while said forward edge is in its gripped position, said cam lowering said table after said form sheets are severed to again engage the unsevered portion of said assembly with said traversing means, whereby said unsevered portion will be ejected from the device by said traversing means.

11. A device for separating form sheets from a snap-out assembly comprising, traversing means within the device to advance said assembly through said device, a pair of closely adjacent rotating rollers mounted therein, a shaft within said device, driving means for said shaft, cams on said shaft, mechanism actuated by said cams to move said assembly while on said traversing means into gripping position for its forward end, to momentarily bend an intermediate portion of said assembly, to guide the rear edge of said assembly into engagement with said rotating rollers when released by said bending means, and to release the assembly from its gripping position.

12. A device for separating form sheets from a snap-out assembly comprising, traversing means within the device to advance said assembly through said device, a pair of closely adjacent rotating rollers mounted therein, a shaft within said device, driving means for said shaft, a single rotation clutch in said driving means, cams on said shaft, mechanism actuated by said cams to move said assembly while on said traversing means into gripping position for its forward end, to guide the rear edge of said assembly into engagement with said rotating rollers, to release the assembly from its gripping position, and an electric circuit closed by said assembly for engaging said clutch.

13. A device for separating form sheets from a snap-out assembly comprising, traversing means within the device to advance said assembly through said device, a pair of closely adjacent rotating rollers mounted therein, a shaft within said device, driving means for said shaft, gripping means for the forward end of said assembly, cams on said shaft, mechanism actuated by said cams to move said assembly above said traversing means into gripping position, to guide the rear edge of said assembly into engagement with said rotating rollers, to release the assembly from its gripping position, and means to start and stop said cam shaft in accordance with a predetermined cycle.

14. A device for separating form sheets from a snap-out assembly comprising, traversing means within said device to advance said assembly through said device, a pair of closely adjacent rotating rollers mounted therein, a shaft within said device, driving means for said shaft, cams on said shaft, mechanism actuated by said cams to move said assembly while on said traversing means into gripping position for its forward end, to momentarily bend the intermediate portion of said assembly, to guide the rear edge of said assembly into engagement with said rotating rollers when released by said bending means, to release the assembly from its gripping position, means to start rotation of said shaft when said assembly is in its gripping position, and means to stop rotation of said shaft after one complete revolution.

15. A device for separating form sheets from a snap-out assembly comprising, traversing means within said device to advance said assembly through said device, a pair of closely adjacent rotating rollers mounted therein, a shaft within said device, driving means for said shaft, a clutch in said driving means, cams on said shaft, mechanism actuated by said cams to move said assembly while on said traversing means into gripping position for its forward end, to guide the rear edge of said assembly into engagement with said rotating rollers, to release the assembly from its gripping position, means controlled by movement of said assembly within the device to start rotation of said shaft, and means to stop rotation of said shaft.

16. A device for separating form sheets from a snap-out assembly comprising, traversing means within said device to advance said assembly through said device, a pair of closely adjacent rotating rollers mounted therein, a shaft within said device, driving means for said shaft, a solenoid operated clutch in said driving means, cams on said shaft, mechanism actuated by said cams to move said assembly while on said traversing means into gripping position for its forward end, to guide the rear edge of said assembly into engagement with said rotating rollers, to release the assembly from its gripping position, means controlled by movement of said assembly within the device to start rotation of said shaft, means to stop rotation of said shaft, a switch controlled by said assembly, a circuit to energize said solenoid and start rotation of said shaft, and a second switch to open said circuit after rotation of said shaft has started.

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