Aug. 23, 1932. H. E. SHEELER 1,873,792

PAPER SLITTING AND STACKING DEVICE

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FIG. 1

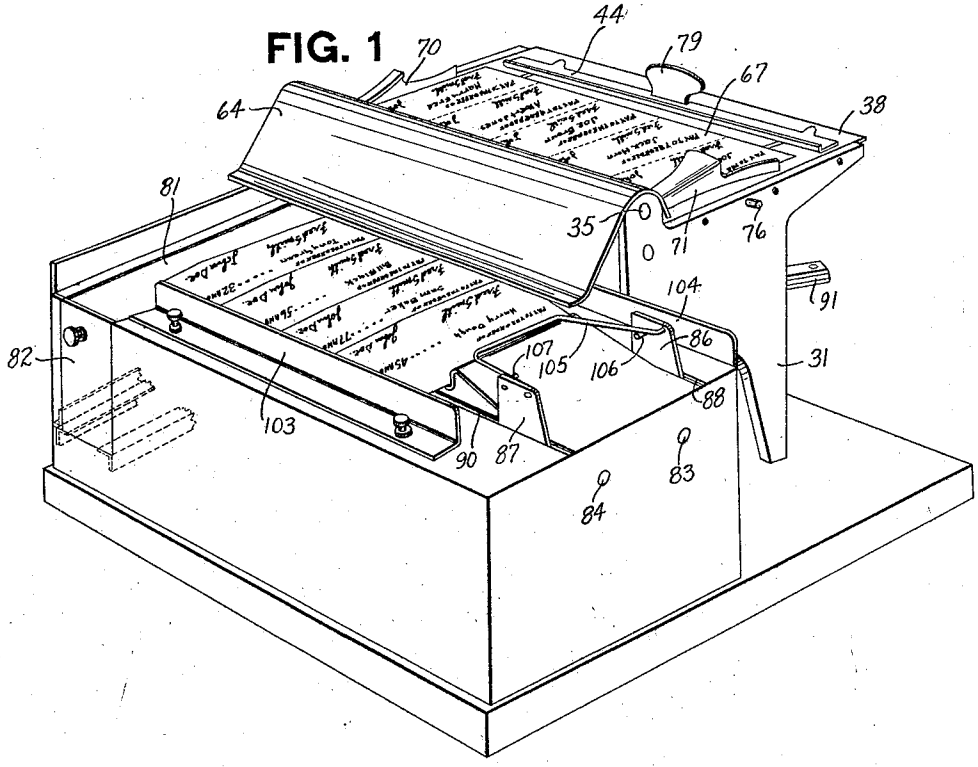
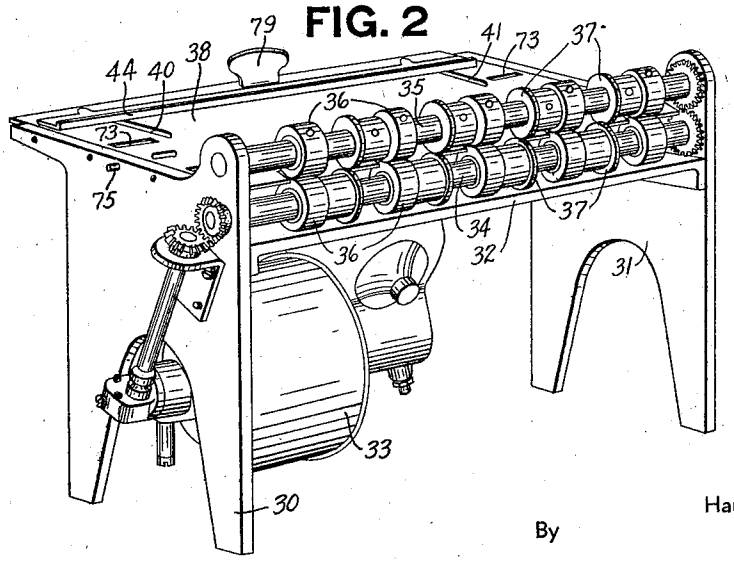


FIG. 2



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FIG. 3

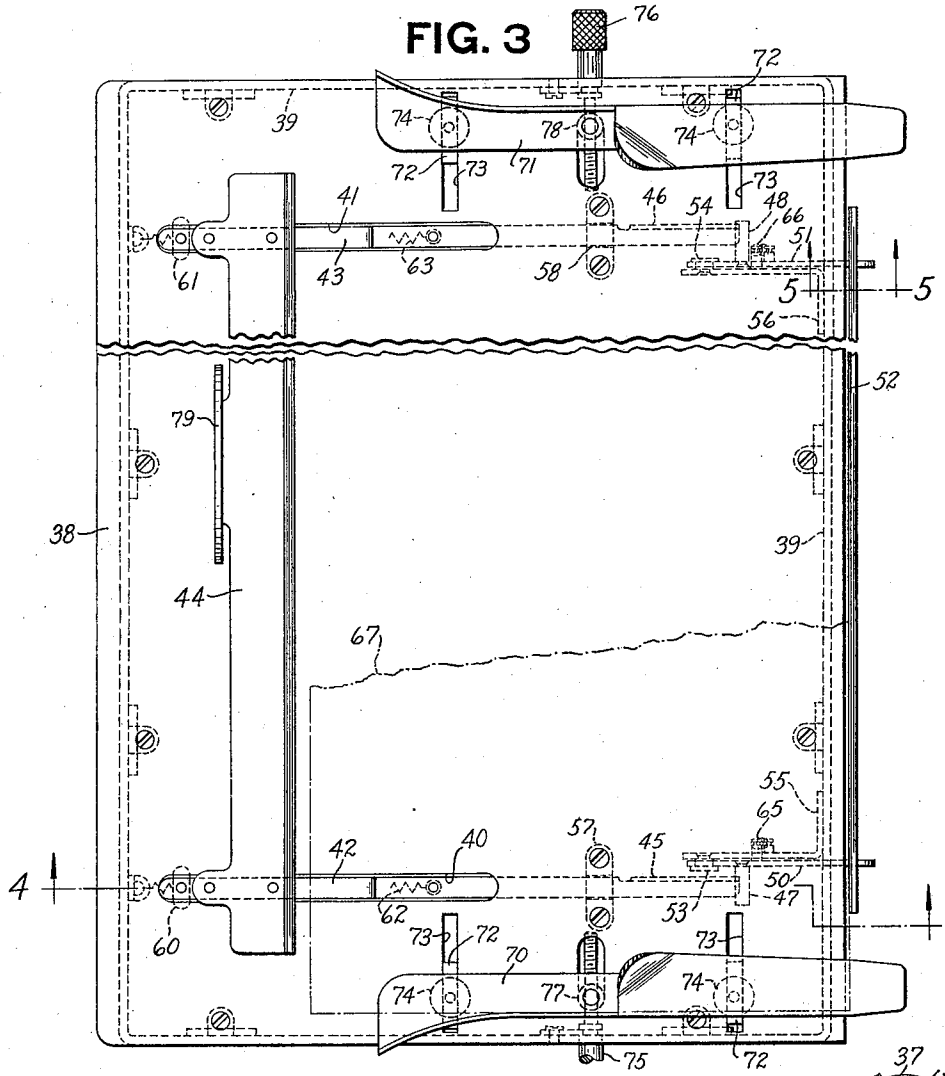


FIG. 4

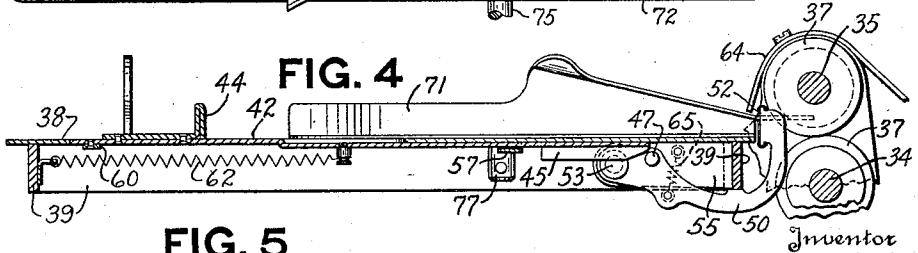
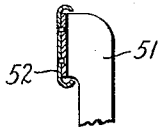


FIG. 5



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FIG. 6

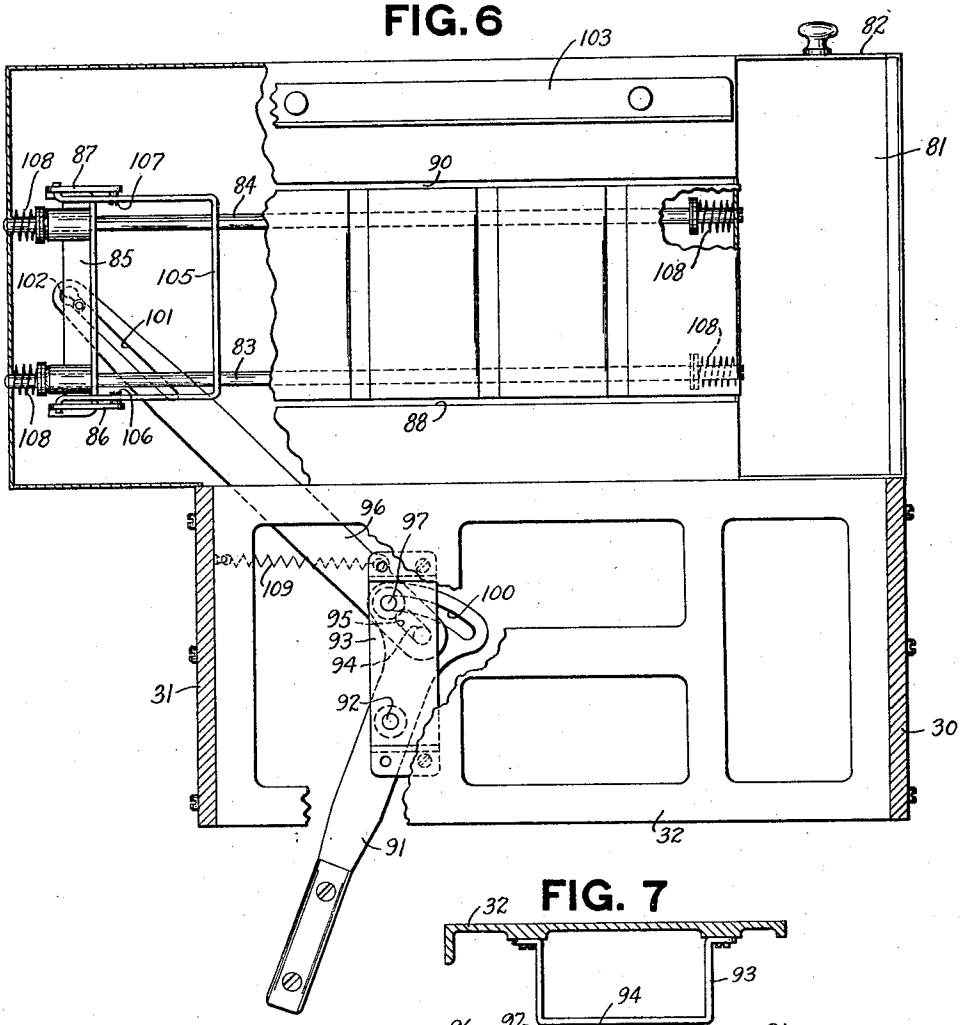
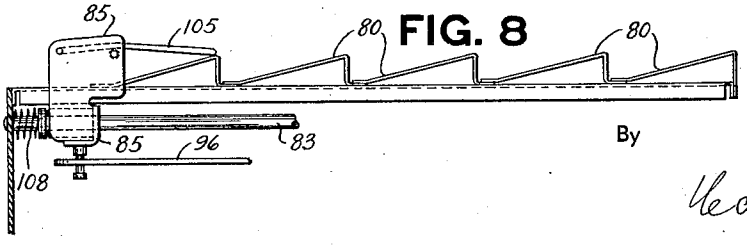


FIG. 7

FIG. 8



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UNITED STATES PATENT OFFICE

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PAPER SLITTING AND STACKING DEVICE

Application filed January 30, 1931. Serial No. 512,300.

This invention relates to paper slitting machines and the like, but more particularly to such a machine adapted to slit or shear a piece of paper or other like material into several uniform parts, and includes a device for stacking the severed parts in sequential order and depositing them in a receptacle.

One of the objects of this invention is to provide a slitting device for cutting a sheet having printed thereon several sequentially arranged checks into as many individual checks.

Another object is to provide said slitting device with a novel hand stacking device for maintaining the sequential order of the severed parts and for depositing them in a suitable receptacle. This stacking device being conveniently located for the operator, and so arranged that the sweep of the stacking arm requires little movement and effort on the part of the operator.

Another object is to provide said slitting device with essential guard means to protect the operator's hands from the slitting cutters.

Still another object is to provide guard means for preventing the material to be slit, from accidentally getting into the feeding and slitting mechanism before it is properly located in relation to said feeding and slitting mechanism.

A further object is to provide means for properly locating the material to be slit in relation to the slitting cutters.

A still further object is to provide a means for delivering the material to be slit to the feeding and slitting mechanism, said delivering means being also adapted to simultaneously render the guard means ineffective.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

Of said drawings:

Fig. 1 is a perspective view of the complete machine.

Fig. 2 is a prespective view showing the slitting cutters and feed rolls, and the means for driving them.

Fig. 3 is a top plan view illustrating the guard, the material locating mechanism, and the mechanism for advancing the material to be slit to the slitting and feeding mechanism.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3, looking in the direction of the arrows, and also includes the slitting cutters.

Fig. 5 is a sectional view of the guard rail taken along line 5—5 of Fig. 3, looking in the direction of the arrows.

Fig. 6 is a top plan view partly broken away to illustrate the hand operated check-stacking mechanism.

Fig. 7 is a side elevation showing the method of mounting the hand operated check-stacking lever to the slitting machine frame.

Fig. 8 is a side elevation showing the inclined stacking pockets and the stacking slide.

General description

In the case of large concerns where there are a large number of payroll checks, dividend checks, or the like, to be issued on a certain day, it is customary in order to reduce work, to use checks printed in strips. In this case let us assume there are five checks to each strip, which also has a backing sheet and an interposed carbon for the purpose of keeping a duplicate record of each check issued.

The several strips which form the payroll, dividend payment, or the like, of a certain concern, are first run through an addressograph where the names of the payees are printed upon the individual checks in alphabetical order. Maintaining the alphabetical order, the strips are next run through a National Class 2000 register of the well known bank type, where the amount, date, signature, and a consecutive number are printed upon the individual checks. The backing sheet and interposed carbon are next separated from the strip of checks.

The strips are now ready to be cut into individual checks and stacked sequentially, and the object of this invention is to furnish

suitable means for accomplishing this purpose. The operator having the several strips at hand arranged in successive order, feeds them one at a time through a slitting machine where they are cut into individual checks and deposited upon the receiving table of a manually operated stacking device, which stacks the several checks in sequential order and deposits them in a suitable receptacle. This slitting and stacking mechanism will be treated fully in the detailed description following.

Detailed Description

Slitting mechanism

Referring to Fig. 2, the slitting mechanism is supported by a frame or stand having side frames 30 and 31 tied together by a cross frame 32. A motor 33 through suitable gearing drives a shaft 34 geared to a driven shaft 35. The shafts 34 and 35 are arranged one over the other and parallel to each other, and are rotatably mounted between the side frames 30 and 31. Each shaft is equipped with suitable feed rolls 36, those on one shaft adapted to contact with those on the other. Circular slitting disks or cutters 37 are also fast on the respective shafts 34 and 35. The edges of each pair of opposed slitting disks overlap and lie in contact with each other in the usual manner.

A feed table 38 (Figs. 2, 3 and 4) mounted on a rectangular bar 39 secured to frames 30 and 31, is slightly inclined towards the bite of the feed rolls 36, and has two transverse slots 40 and 41 adapted to receive guides 42 and 43 carried by a feed bar 44, to hold the same parallel at all times with the feed and cutting shafts 34 and 35. The guides 42 and 43 are formed in such a manner that the ends secured to the feeding bar 44 extend into the transverse slots 40 and 41, while the opposite ends are below the feed table and are bent at right angles to form camming rails 45 and 46, adapted to engage a pair of studs 47 and 48 fast in arms 50 and 51 secured to a guard rail 52. The arms 50 and 51 are pivoted on studs 53 and 54 respectively to suitable brackets 55 and 56 secured to the rectangular bar 39. Straps 57 and 58 secured to the bottom of the feed table 38 are slotted to receive and support the forward ends of the guides 42 and 43. Lugs 60 and 61 secured to the ends of the guides 42 and 43 extend across the transverse slots 40 and 41 to hold the feeding bar 44 in place against the top surface of the feed table 38. Springs 62 and 63 are tensioned to return the feeding bar to its normal position, shown in Fig. 3, and the guides 42 and 43 contact the rear ends of the slots 40 and 41 to limit the movement of said guides and the feeding bar 44.

Secured to the side frames 30 and 31 is a guard or cover 64 (Figs. 1 and 4), adapted to cover the slitting cutters 37 and feeding rolls 36. An opening between the cover 64 and the feeding table 38, through which the check strip is advanced to the feeding rolls, is normally closed by the guard rail 52. The rail 52 is held in such normal position by springs 65 and 66, with the arms 50 and 51 of the rail contacting the bar 39, which acts as a stop to maintain the rail 52 in its normal position.

The guard rail 52 (Figs. 3, 4 and 5) serves a threefold purpose; first, it protects the operator's fingers from the slitting cutters; second, it prevents the check strip 67, a portion of which is shown in dot-and-dash lines in Fig. 3, from being carelessly brought into contact with the feed rolls and slitting cutters before it is properly aligned therewith; and third, it serves as a horizontal alining stop against which the check strip is placed prior to being advanced to the feed rolls.

In order to take care of any variation in the check strips and to aline them laterally with the feed rolls and slitting cutters, two parallel guides 70 and 71 are adjustably mounted on the feed table 38 by keys 72, fast on said guides and extending through parallel slots 73 in the feed table. Washers 74 secured to the keys 72 traverse the slots 73 to hold the guides 70 and 71 in place on the feed table top. The guides 70 and 71 are adjusted and held in their lateral positions by two screws 75 and 76 rotatably mounted in the bar 39 and cooperating with two nuts 77 and 78 secured to the guides 70 and 71, and extending through clearance slots in the feed table.

In use, the operator places a strip of checks 67 (Figs. 1 and 3) on the table 38 within the lateral guides 70 and 71 and aligned against the guard rail 52. A finger piece 79 on the feeding bar 44 enables the operator to manually move the feeding bar toward the feeding rolls. The first movement of the feeding bar causes the cam rails 45 and 46 to contact the studs 47 and 48 respectively, moving the guard rail 52 below the surface of the feed table, thus clearing the opening to the feed rolls. As the feeding bar is progressed, it picks up the check strip and advances it into contact with the feeding rolls. After each operation, the springs 62 and 63 return the feeding bar 44 to its home position, and the springs 65 and 66 lift the guard rail 52 back to its effective position. The construction of the guard rail is such that if released before the check strip has advanced out of its path it does not interfere with the continued progression of said check strip.

Check stacking mechanism

After a strip of checks has been slit into individual checks, it is essential that the sequential order of the individual checks be maintained, and to accomplish this a stacking

device is arranged to work in conjunction with the slitting machine. Such a stacking device will now be explained.

Referring to Figs. 1, 6 and 8, the receiving table of the stacking device is on a plane somewhat below the feed rolls and slitting cutters, and is composed of several inclined pockets or steps 80, the top of one step adjoining the bottom of the next in sawtooth fashion. These inclined pockets or steps terminate in a receiving well 81 containing a drawer 82, the high part of each inclined pocket facing the receiving well.

Horizontally supported between the ends of the boxlike body of the stacking device are a pair of parallel rods 83 and 84 which support a slide 85 (Figs. 6 and 8) having upright arms 86 and 87 extending through parallel slots 88 and 90 in the receiving table, said slots transversing the inclined pockets 80.

Conveniently located for the operator is a hand lever 91 (Figs. 6 and 7), pivoted on a stud 92 fast in a bracket 93 secured to the cross frame 32. A roller 94 carried by the lever 91 is adapted to cooperate with a slot 95 in a lever 96, pivoted on a stud 97 fast in the bracket 93. A slot 100, in the hand lever 91, on a radius concentric with the center of the pivot stud 92 cooperates with the stud 97 to form a guide support and stop for said hand lever. A slot 101 in the lever 96 is adapted to cooperate with a stud 102 secured to the slide 85.

Referring to Fig. 6, when the hand lever 91 is moved counter-clockwise, the roller 94 rocks the lever 96 clockwise, causing the slide 85 to travel from left to right, and the arms 86 and 87 to traverse the inclined pockets 80.

Again calling attention to Fig. 1, as the individual checks are expelled by the feed rolls 36, the cover 64 directs them downwardly, causing the left-hand check to be deposited in the drawer 82, and each remaining check to be deposited in its individual inclined pocket 80. An adjustable angular flange 103 mounted on the receiving table prevents the checks from falling out of the pockets as they are delivered from the slitting machine, and a fixed flange 104 prevents displacement of the checks on the opposite side of the inclined pockets. The checks are longer than the inclined pockets so that the ends thereof extend out over the slots 87 and 90.

As the operator causes the slide 85 to be drawn from right to left (Fig. 1), the abrupt faces of the arms 86 and 87, which extend above the inclined pockets, contact the lower edge of the right-hand check carrying it up the incline of the first pocket and depositing it in the second pocket on top of the check therein. These two checks are then forced up the incline of the second pocket and deposited in the third pocket on top of the check in that pocket, and so on until at the end the pile of four checks is pushed up the incline of the last pocket and dropped into the drawer 82 on top of the fifth check therein. Thus, it will be seen that the checks will pile up in the drawer in sequential order, which is the result desired. A retaining bail 105 (Figs. 1 and 6) pivoted in the arms 85 and 86 is positioned by studs 106 and 107 fast in the arms 85 and 86, and travels along the top of the inclined pocket to prevent the checks from fluttering out of the pocket on a fast operation of the stacker. Spring bumpers 108 are provided on both of the rods 82 and 83 to check the bracket at the terminus of its travel in either direction. A spring 109 is tensioned between the lever 96 and the machine frame to automatically return the slide 85 to its normal position of rest after each stacking operation.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed is:

1. In a machine of the class described, the combination of paper slitting means; paper feeding means; a driving means for the slitting and feeding means; means for advancing the material to be slit to the feeding and slitting means; means for closing the opening through which the material is advanced to the feeding and slitting means; means operated by the advancing means to remove the closing means from said opening just prior to the entry of the paper into the opening; and adjustable parallel guides for laterally aligning the material to be slit with the slitting means.

2. In a machine of the class described, the combination of paper slitting means; paper feeding means; a driving means for the slitting and feeding means; a hand operated means for presenting the material to be slit to the feeding and slitting means; a guard means for normally closing the opening through which the material is presented to the feeding and slitting means, said guard means rendered ineffective by the hand operated presenting means as the material is advanced to the feeding and slitting means; and parallel guides with hand adjustment for laterally alining the material to be slit with the slitting means.

3. In a machine of the class described, the combination of paper slitting means; paper feeding means; a driving means for the slitting and feeding means; a guard rail for obstructing the opening through which the material to be slit is introduced to the feeding and slitting means; and means for removing the obstructing means and introducing the material to the feeding and slitting means.

4. In a machine of the class described, the combination of a paper slitter; a paper feeder; driving means for the slitter and feeder; a guard rail for normally closing the opening through which the material to be slit is introduced to the feeder and slitter, said guard rail also furnishing a means for alining the material to be slit parallel with the slitting cutters; and means for removing the guard rail, and for feeding the material to be slit to the slitter and feeder.

5. In a machine of the class described, the combination of a paper slitter; a paper feeder; a driver for the slitter and feeder; a guard rail normally closing the opening through which material is advanced to the feeder and slitter, said guard rail adapted to protect the operator from the slitter and also furnish a means for locating the material parallel with the slitting cutters; and a hand operated slide for removing the guard rail from the opening and for carrying the material to be slit into contact with the slitter and feeder.

6. In a machine of the class described, the combination of a check slitting means; check feeding means; a driver for the slitting and feeding means; a normally effective guard rail for closing the opening through which the check strips are advanced to the slitting and feeding means, to prevent said check strips from being advanced therein prematurely; and a slide arranged to move the guard rail from the opening and to convey the check strips to the slitting and feeding means.

7. In a machine of the class described, the combination of a check slitting means; check feeding means; a driving means for the slitting and feeding means; a guard rail for closing the opening through which the check strips are conveyed to the feeding and slitting means to protect the operator's hands from the slitting and feeding means; and a hand operated slide having an automatic return for moving the guard rail from the opening and for delivering the check strips to the feeding and slitting means.

8. In a machine of the class described, the combination of a slitter, for slitting strips of checks into individual checks; means for feeding the check strips to the slitter; driving means for the slitter and feeding means; a guard rail arranged to normally close the opening through which the check strips are advanced to the slitting and feeding means, to protect the operator's hands from the slitting and feeding means, to prevent the check strips from being conveyed to the slitting and feeding means prematurely, and to serve as a locator for aligning the check strips parallel to the slitting cutters; and a hand operated slide, with an automatic return, for removing the guard rail from the opening and for conveying the check strips to the feeding and slitting mechanism.

9. In a machine adapted to feed a check strip and slit the same into individual checks; a table to receive the check strip preparatory to its being fed and slit; a device intermediate the feeding and slitting means and the edge of the table to prevent the check strip from being prematurely moved into cooperation with the feeding and slitting means, said device also acting as a stop for the check strip; an aligning means to maintain the leading edge of the check strip parallel with the slitting and feeding means; a pair of pivoted arms for supporting said device adjacent the ends thereof; a slide mounted on the table parallel with the device and adapted to be moved towards said device to move the check strip into cooperative relation with the slitting and feeding means; a pair of guides secured to the side and projecting through apertures in the table to prevent lateral displacement of the slide; and cam devices on the guides adapted to rock the check strip aligning device to move said device into a position whereby the slide feeds the check strip into cooperative relation with the slitting and feeding means.

10. In a machine adapted to feed a check strip and slit the same into individual checks, the combination of a table to receive the check strip; a rail normally in the position adjacent one edge of the table to prevent the check strip from being moved past that edge; a pair of pivoted arms for supporting said rail; a projecting means on each of the arms; a slide having secured thereto guide means projecting into openings in the table to guide the same whereby the slide remains parallel to the rail; means carried by the guiding means and adapted to cooperate with the projecting means on the rail supporting arms to move the rail away from the surface of the table as the slide is moved toward the rail; means to return the slide to its normal position; and means to return the rail to its normal position when the slide reaches its normal position.

11. In a machine adapted to feed a check strip and slit the same into individual checks, the combination of a table to receive the check strip; a rail adjacent to one edge of the table and normally closing an opening through which the check strips are advanced to the feeding and slitting means, to prevent premature presentation of the check strip to said feeding and slitting means; a pair of pivoted arms for supporting and positioning said rail; a projecting means on each arm; means on each arm for maintaining the rail in its normal closed position; a slide; a pair of guides secured to the slide and formed in such a manner that one part thereof extends into slots in the table to guide the slide and maintain its parallel relation to the rail, said

guides adapted to contact the ends of said slots to maintain the slide in its normal position, the other part of said guides extending through the slots in said table and having formed thereon camming means adapted to cooperate with the projecting means on the rail supporting arms to move the rail from the opening between the table and the feeding and slitting means as the slide is advanced towards the rail; and means on each guide to return and hold the slide in its normal position.

In testimony whereof I affix my signature.

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