With the ordinary type of web printing press delivery stacking flat sheets, the speed of operation is determined by the time taken to clear each sheet and adjust it into stack position, and the press speed has to be held down to such rate. In accordance with the present invention, however, an adjustable delivery is had capable of handling and accurately stacking the sheets in order as fast the web can be supplied; and it is among the objects of the invention to provide a construction capable of accurately catching and carrying the sheets from the cutter and stacking them irrespective of high press speed. A further object is the provision of multiple directing guide means in association with a transfer roll in common. Another object is the provision of effective detail mechanisms to take the sheets from the cutter and correlate their speed to stacking means. Other objects and advantages will appear as the description proceeds.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawings setting forth in detail an illustrative embodiment of the invention, this being indicative however, of but one of the ways in which the principle of the invention may be employed.

In said annexed drawings:

Fig. 1 is a side elevational view of an embodiment of the invention; Figs. 2 and 3 are enlarged details in vertical and transverse section respectively of cutter and transfer mechanism; Figs. 4 and 5 are fragmentary elevational details of the transfer mechanism; Fig. 6 is a plan view of a table portion; and Fig. 7 is a side elevation of picker finger detail.

Referring more particularly to the drawings, there is shown a frame 2 which is in suitable relation to receive the web w from the source of web-supply, for instance a cylinder-type printing press, the web in such case being the completely printed product ready for cutting and delivery; and mounted in such frame are guide rolls 3, 4, which pass the web to a tension-reducing means which may comprise a roller 5 with coating rollers 6 which may be carried by a shaft 7 adapted for pressure-adjustment, as by means of the spring 8 and screw-threaded tensioners 9. With such arrangement, the web as forwarded therethrough, does not encounter substantial resistance; however as severed therebeyond, the tension is adequately maintained back toward the press. Beyond the tensioning means is a guideway 10 leading to a transfer roll 11, adjacent to which is cutting means, such as a transverse knife 12 carried by a roll 13 which may be of more or less skeletonized form, the knife being desirably backed up on its side surfaces by rubber or other elastic filler strips 13' (see Fig. 2). In the transfer roll 11, corresponding shallow recesses 15 are provided. Adjacent the point of cutting, sheet-catching means is arranged such as to retain for the time being each sheet as cut. As shown more particularly in Fig. 2, such means may comprise pins 16 so positioned as to impale the sheet in turn. Desirably, the transfer roll 11 is of a form having ribs 17 (Fig. 4) in such spaced relation as to adequately carry the sheet brought into contact with the roll, and the roll otherwise may be more or less of skeletonized form. In the recesses between ribs, sheet-releasing means may be conveniently placed, as sheet-releasing levers 18, placed at intervals along a pivot-shaft 19, and having extension fingers 20 of a form to normally lie below the sheet as positioned on the roll. The pivot-shaft 19 is operated by a cam-roller 21 carried by an arm 22 in position to ride about a fixed cam. Two sets of such sheet-releasing levers 18, with their associated shafts 19, are shown in diametric positions on the roll 11, one set being operated by fixed cam 23, and the other set being operated by fixed cam 24. Delivery guides 24, 25 are arranged at diametral points, the guide 24 near the top of the roll 11 and the guide 25 at the bottom. From the guide 24 a conveyor of one or a plurality of bands 26 is arranged to carry the sheet toward the receiving or jogger table 27, above which the picker fingers 28 are carried by suitable means such as chain 29 to be brought into alignment with the advancing edge of the cut sheet as it issues from the conveyor 26. The direction of travel of the picker fingers 28 is in line from such point back over the table 27. The picker finger mechanism includes a lug 30 (Fig. 7) with an associated movable lug 31 which is at the end of a lever 32 carried by a rock-shaft 33, and having its other end normally spring-urged for gripping position by means of spring 35. At the points of sheet pick-up and sheet release, the movable lugs 31 have operating means, such as stationary trips 36 in the path of a lever 34 (Fig. 5) projecting from the rock-shaft 33, the arrangement being such that the lever strikes the trip and is compressed against the springs 35 sufficiently to open the jaw 31 momentarily to receive the end of a sheet as shoved into it by the conveyor 26, whereupon the lever 34 slips past the trip and the jaw 31 returns to clamping position thereby holding the sheet.
and being thence carried out by the belt 29 to a point of release where again the lever 34 strikes a fixed trip and is compressed against springs 35, again opening the jaw 31 and allowing the sheets to drop onto the table 37. The table 37 has fixed stops 38 and movable or jogger stops 39. The latter are given a slight reciprocating motion to settle the sheet down into stack-position, and the mechanism for this may involve support arms 40 (Fig. 6) carrying the jogger fingers 39, such arms being carried by a slide rod 41 which is given a slight axial-wise reciprocation by levers 42 operated by rods 43 as actuated by plunger 44 (Fig. 1).

The lower delivery guide 25 is associated with off-bearing belts 26', and receiving or jogger table 27' over which are the picker fingers, all as described foregoing. That is, as shown on Fig. 1, there are right-hand and left-hand off-bearing guides to respective receiving tables, and the timing of the cams 23, 23', operating the respective sheet-release fingers 20 is such that one sheet is released opposite the upper guide 24, being raised just in time to slide therethrough, and be in advance thence into the conveyor 26, to be seized in turn by picker finger 23 as it emerges from said conveyor, and being thence carried out over the table 27 to be released and settle down thereupon, as assisted by the jogging action of the movable joggers 39. While the sheet fed into the upper off-bearing guide is taking this course, the next cut sheet is traveling around, as directed by the endless belts 45 to the lower side of the roll 11, where the release-fingers 20 then free it from the the impaling pins 16 and allow it to start into the off-bearing guide 25, whence it proceeds through the conveyor and to the next picker finger 23 to be carried thereby over the table 27' and deposited.

To prevent the sheets from being shoved too violently into the jaws of the pickers 23, the momentum of the sheet in the conveyors 26 and 26' is slightly checked just before reaching the picker, by a lifter element 46 (Fig. 1) which is raised under each sheet in timed relation by suitable mechanism, as for instance a lever 47 operated by a cam 48 and a similar arrangement is provided for each conveyor.

It is thus seen that as fast as the web 30 can be fed, the sheets are cut and forwarded to the respective tables in alternation, one sheet being taken and cleared to final stack-position, while the next is being started on its way, and so on, the speed of progress from the cutter being unimpeded by necessity of time factor for clearing and stacking each sheet out of the way of the next advancing sheet. Furthermore, the respective structures are of such character and arrangement as to afford accuracy of operation, and convenient accessibility for disposal and further handling of the finished sheets, irrespective of high speed operation.

Other modes of applying the principle of the invention may be employed, change being made with regard to the details described, provided the means stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sheet-catching means in association with said web-forwarding means for catching each cut-off sheet, serially-arranged off-bearing guides, and means for releasing the sheets into each guide in turn.

2. In mechanism of the character described, web-forwarding means, a transfer roll, a cutter adjacent for cutting the web into sheets, impaling pins on said roll, serially-arranged off-bearing guides, and means for raising the sheets from the pins for discharge into each guide in succession.

3. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sheet-catching means in association with said web-forwarding means for catching each cut-off sheet, an off-bearing guide at each side of said roll, means for releasing the sheets into each guide in turn, and a receiving table supplied by each guide.

4. In mechanism of the character described, web-forming means, a transfer roll for receiving the web, means for cutting the web into sheets, means on said roll for holding the cut sheets, off-bearing guides adjacent the upper and the lower portions of said roll respectively, and means for releasing the sheets alternately into the upper and lower guides.

5. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sheet-catching means in association for catching each sheet, serially-arranged off-bearing guides, conveyors adjacent each guide, a receiving table for each said conveyor, and picker fingers over each guide to seize and transfer sheets from the conveyor to the table.

6. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sheet-catching means in association for catching each sheet, serially-arranged off-bearing guides, conveyors for each guide, a receiving table for each such conveyor, picker fingers to seize and transfer sheets from each conveyor to each table, and jogging guides for settling the sheets in order on the tables.

7. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sheet-catching means in association for catching each sheet, serially-arranged off-bearing guides, means for releasing the sheets into each guide in turn, a conveyor and a receiving table for each guide, picker fingers having movable jaws, for opening said jaws at point of loading and point of discharge, and means in association with each table for settling the sheets in order.

8. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sheet-catching means in association for catching each sheet, serially-arranged off-bearing guides, means for releasing the sheets into each guide in turn, a conveyor and receiving table for each guide, picker fingers on endless belts traveling over each table to carry the sheets from the conveyor to the table, and vibrating guides adjacent each table for settling the sheets into order.

9. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sheet-impaling pins, serially-arranged off-bearing guides, levers for raising the sheets from the pins to discharge into said guides, cam means for operating...
ing said levers, a conveyor and a receiving table for each guide, belt-carried picker fingers over each table, said fingers having movable jaws, and stationary trip means for opening such jaws at points of load and discharge.

10. In mechanism of the character described, web-forwarding means, means for cutting the web into sheets, a transfer roll having sets of sheet-catching means, an off-bearing guide at each side of the transfer roll, means for releasing the sheets in succession into each guide, a conveyor and a receiving table for each guide, belt means over each table carrying picker fingers, the latter being movable jaws, trip means in the path of said fingers for opening the jaws at point adjacent the conveyor and adjacent the end of the table, and means for settling the sheets in order on the table.

11. In mechanism of the character described, web-forwarding means, a transfer roll, a cutter adjacent said transfer roll for cutting the web into sheets, impaling pins in diametral sets on said roll, an off-bearing guide at each side of said roll, diametral sets of levers for raising the sheets from the impaling pins, a cam for operating each such set of levers to release the sheets into each off-bearing guide in turn, a conveyor and a receiving table for each guide, belt-carried picker fingers traveling over each table, said fingers having movable jaws, spring-means for normally closing such jaws, and stationary trips in position to open such jaws adjacent the conveyor and again at the end of the table.

12. In mechanism of the character described, web-forwarding means, a transfer roll, a cutter adjacent said transfer roll for cutting the web into sheets, impaling pins in diametral sets on said roll, an off-bearing guide at each side of said roll, diametral sets of levers for raising the sheets from the impaling pins, a cam for operating each such set of levers to release the sheets into each off-bearing guide in turn, a conveyor and a receiving table for each guide, belt-carried picker fingers traveling over each table, said fingers having movable jaws, spring-means for normally closing such jaws, stationary trip means in position to open such jaws adjacent the conveyor and again at the end of the table, and means for settling the sheets in order on the table.

13. In mechanism of the character described, web-forwarding means, a transfer roll, a cutter adjacent said transfer roll for cutting the web into sheets, a conveyor for forwarding the sheets, a table for receiving the sheets, traveling picker fingers for carrying the sheets from the conveyor to the table, a velocity-checking lifter for raising the sheet from the swiftly-moving conveyor as it approaches the picker finger, means for operating the picker fingers to receive the sheets, and means for opening the picker fingers at discharge position over the table.

14. In mechanism of the character described, web-forwarding means, a transfer roll for receiving the web, means for cutting the web into sheets, off-bearing guides adjacent the upper and the lower portions of said roll respectively, and sets of levers on said roll operable to release the sheets alternately into the upper and lower guides.

15. In mechanism of the character described, sheet-forwarding means, a receiving table for the sheets, traveling picker fingers to carry the sheets from the forwarding means to the table, and means for checking the velocity of the sheet as forwarded into each picker finger, said means lifting the sheet from the forwarding means.

16. In mechanism of the character described, a sheet-forwarding conveyor, a receiving table for the sheets, traveling picker fingers to carry the sheets from the conveyor to the table, and means for checking the velocity of the sheet as forwarded into each picker finger, said means including a lifter element raising the sheet from the swiftly-moving forwarding conveyor as it approaches the picker finger.

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