My invention relates to multi-color intaglio printing machines for printing on sheets. In the old machines of this type very considerable floor space is required which is not always available in printing works. It is the object of the invention to reduce the required floor space so that it is the same as that taken up by a single color printing machine. According to this invention, a sheet received by grippers is first passed between the impression cylinder and the form cylinder of the first printing set or couple and is then transferred to a delivery drum arranged at the side of and below the impression cylinder. This delivery drum transfers the sheet to the impression cylinder of the second printing set or couple which is arranged below the first printing set. The sheet after passing the second couple is then transferred to a second delivery drum arranged at the side and below the impression cylinder of the second set, and may then be passed either to a further printing set or to the delivery apparatus.

The accompanying drawing shows diagrammatically by way of example one construction embodying the invention.

A sheet coming from a feed table is caught by the grippers of an impression cylinder of the first printing set, is passed between the impression cylinder and the form cylinder and is printed with the first color. The sheet is then transferred to a delivery drum provided with grippers, the periphery of the drum being approximately double the length of the sheet printed upon. From said delivery drum, the sheet is first transferred to a drying drum provided with heating devices, the fresh impression being turned outside. The sheet is then returned by grippers of the drying drum to the second half of the delivery drum, said half being preferably provided with cooling devices. Thereupon, the sheet is taken off the delivery drum by grippers of an impression cylinder of the second printing set, which is arranged vertically underneath the impression cylinder of the first printing set. The sheet now passes between impression cylinder and form cylinder of the second printing set and is printed with the second color. Now the sheet is again transferred to one half of a delivery drum and thereby is passed on to a drying drum. From the latter the sheet passes to the second half of the交付 drum and thereby is transferred to the delivery apparatus. Of course, the sheet may also be passed from the delivery drum, instead of to the delivery device, to the impression cylinder of a third printing set which may be arranged below the second printing set, the invention naturally not being restricted to two color printing machines.

What I claim is:

1. In a multi-color intaglio printing machine for printing on sheets, the combination of a plurality of superposed printing couples each comprising an impression and a form cylinder, a transfer cylinder adapted to cooperate with the impression cylinders of each printing couple, a drying cylinder adjacent each transfer cylinder, and two sets of grippers provided on said transfer cylinders so as to first transfer the printed sheet to the transfer cylinder and thereby to said drying cylinder, the latter then re-transferring the printed sheet to the same transfer cylinder and thereby to the impression cylinder of the next printing couple.

2. In a multi-color intaglio printing machine for printing on sheets, the combination of a plurality of printing couples each comprising an impression cylinder and a form cylinder, the cylinders of said printing couples being superposed in vertical relation, a transfer cylinder cooperatively related to each impression cylinder, a drying cylinder adjacent each transfer cylinder, two sets of grippers provided on said transfer cylinders and arranged to first transfer the printed sheet to the transfer cylinder and thereby to the corresponding drying cylinder, the latter re-transferring the sheet to its corresponding transfer cylinder to be thereby transferred to the impression cylinder of the next printing couple, and a delivery mechanism for receiving the printed sheets from the transfer cylinder of the last printing couple.

In testimony whereof I have affixed my signature.

OTTMAR WILHELM.