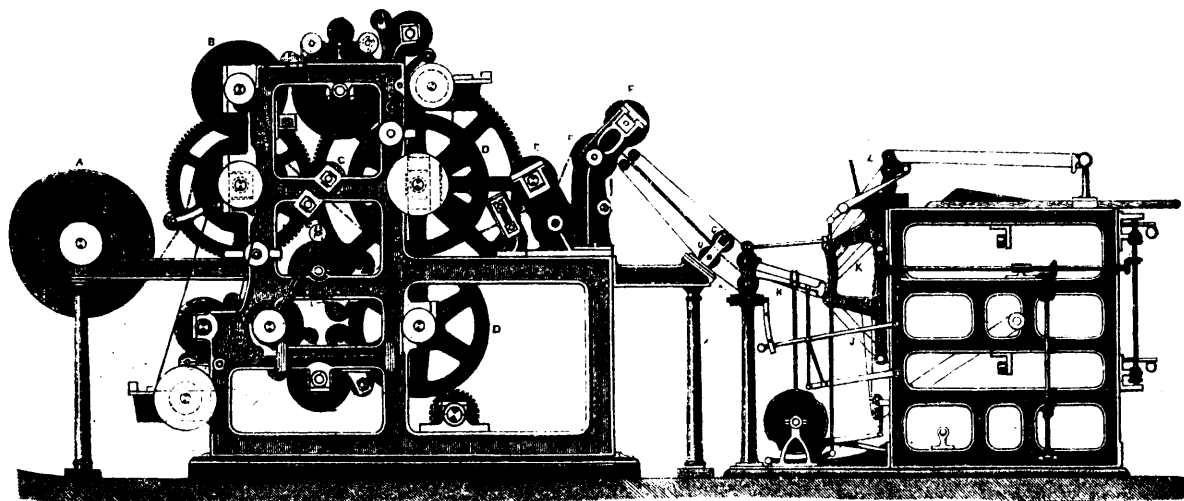
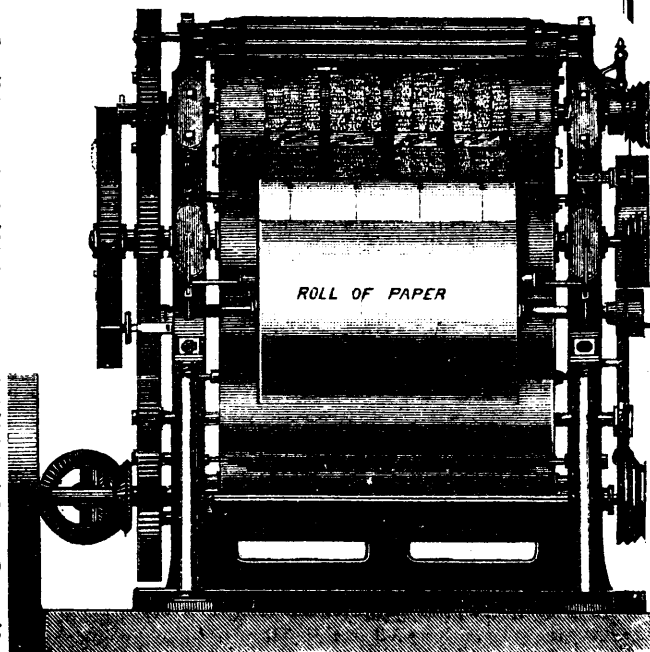


**THE INGRAM PRINTING MACHINE.**

(USED BY THE "ILLUSTRATED LONDON NEWS.")

WE copy an illustration from the *Engineer* of a press which has been specially designed for printing the *Illustrated London News*. It has been invented by Mr. W. J. Ingram, M.P., who argued that as type is printed from circular forms, engravings could be dealt with in the same way. The machine has been patented, and we cannot better describe the machine than by reproducing the following passage from Mr. Ingram's specification:—It has been found in practice that cuts or engravings require much more careful inking than the letter-press, and that the ordinary inking arrangements, which are found to answer very well for printing letterpress, will give but very imperfect work from engravings or cuts. It has also been well-nigh impossible to obtain satisfactory impressions from cuts or engraved plates bent to the sharp curve required to correspond to printing cylinders of the ordinary size. In order to overcome these difficulties, I considerably decreased the diameter of the printing cylinder to which the cuts or engraved plates are to be adapted, so that the curves to which these cuts or engraved plates are to be bent may be gentler and of longer radius than the curved surface of the other printing cylinder. By this means I am also enabled to place on the same printing cylinder two, three, or more copies of the cuts or engravings, so that while the surface speed of the large and small printing cylinders is the same, the small cylinder if it contains only one set of stereotype plates for the letterpress, will rotate two, three, or more times for every revolution of the large cylinder. The impression cylinder, which acts in conjunction with the large printing cylinder, is also correspondingly increased in size, and rotates at the same surface speed. If desired, the type cylinder may be increased in size so as to be capable of receiving a duplicate set of stereotype plates for the letterpress, while the



large cylinder will have a triplicate or other suitable number of sets of cuts for the engravings. The large printing cylinders will therefore perform two-thirds of a revolution while the smaller or type cylinder is making one complete revolution. My next improvement relates to the inking apparatus, which is used in conjunction with the large printing cylinder, and consists in the use of an increased number of inking rollers and distributing rollers, so that the engravings may be more perfectly inked than heretofore. The ink, as is usual, is transferred by a vibrating roller and a ductor or fountain roller to the first distributing cylinder, from which it is taken by two rollers, and is deposited on a second distributing cylinder, to which an endway motion is given by means of any suitable mechanism. The ink is thereby evenly distributed over the surface of the second cylinder, from which it is transferred by other rollers to two other distributing cylinders, in contact with which four inking rollers rotate and take therefrom the ink, which they transfer to the printing surface. In this manner the cuts or engravings are plentifully and evenly supplied with ink, and good impressions are obtained therefrom."

In our engraving A is the roll of paper, containing a length of about two or three miles. B the type and impression cylinder

for printing the inner forms, or type side of the paper. C C calendering or smoothing rolls to remove the indentations produced by the impression of B, so that a smooth surface is preserved to receive the outer form, or illustrated side of the paper, which is printed by D D. E E are cylinders, one provided with a saw-toothed knife, and the other with a corresponding indentation, to perforate the paper between each impression. F F are rolls for holding the paper securely, to resist the effect of G G, which are called snatching rolls, and, being driven at a higher surface speed than the holding rolls, snatch or break the paper at the places where it has been perforated, and form it into separate sheets. As it is found that machinery for folding newspapers works much better at a moderate speed, in this case it has been arranged in duplicate, so that each folder only works at half the speed of the printing machine. The vibrating arm H delivers the sheet alternately to K and J, which are carrying tapes leading to the two folding machines. If the sheets are wanted unfolded, the arm H is moved to its highest position and there fixed; it then delivers the sheets to another roller, and by means of a blast of air and a flyer, they are laid in a pile on a table provided for them. This change can be made without stopping the machine.