usual stereo metal is not sufficiently durable for long runs, and it is so brittle that plates are frequently broken in handling and on the press. If a metal composition can be produced that may be readily cast and yet be hard and somewhat flexible, it would vastly increase the use of stereotypes. In England, where stereos are much more used for book and job work than they are in this country, the plates are usually worked on iron blocks. The Dalziel twin clamp blocks, which are readily adjusted to suit different sizes of plates, are in quite general use. They hold plates firmly and being made of iron do not warp, so plates are evenly supported and there is very little liability of their being broken on the press. Many of the "patent blocks" in use here are so much out of true that it would be almost impossible to work stereotypes on them without breaking the plates. This is largely due to the depressed condition of trade during the last few years having compelled printers to continue to use blocks and other materials long past the time when they would, under more favorable circumstances, be cast aside.

THE DESJARDINS TYPE-JUSTIFYING MACHINE.

MR. THEODORE L. DE VINNE gives as his experience that the cost of justifying in type composition averages over one-half of the expense of composition. By the present system, the first corrections, revision, author's corrections, revisions and re-revisions all require rejustification. The great expense of this work is manifest even to the layman.

The new automatic type-justifying machine, which has just been completed by Mr. B. M. DesJardins, a mechanical engineer, of Hartford, Connecticut, and of which a cut is given of the first machine, changes the present methods only enough to eliminate the unscientific processes. The machine automatically justifies a column of type from the galley after all the corrections and alterations have been made. The type for the new machine is set with only a dividing space between the words, and the lines are left at whatever lengths they happen to end and are separated by a dividing rule to prevent the loose characters from becoming mixed. This method to some extent has already been adopted by Mr. Theodore L. De Vinne, the eminent New York printer. Of late years the McMillan typesetting machine has been adopted by the firm, and the lines are run into special channeled galleys about eighteen or twenty inches long, from which the office proofs are taken before the matter is cut up into the real lines which are finally justified by hand.

It is a well established fact that mechanical calculation gives the very best possible results. Whenever absolute accuracy is wanted, a mechanical instrument of precision is employed to aid the human eye. In properly proportioning his spaces, the printer calculates the size wanted between each word as best he can, by the eye, and the greater the accuracy required, the more time will be spent in justifying.

In designing his justifier, Mr. DesJardins has aimed to eliminate all of this unpleasant feature of type composition, which all together, including corrections and alterations, amounts to fully one-half of the cost, where good work is required. The new machine is only a little larger than a typewriter. The mechanism is tilted back at a suitable angle to handle loose type. The size and weight are only necessary to provide suitable rigid supports for the two type galleys.

The automatic mechanisms, which perform a peculiar work that no other inventor has succeeded in accomplishing, are about as follows: The column is pushed forward intermittently to enable the discharge of the successive lines. This motion is already a common feature of several type-distributers. As the machine takes hold of the successive lines, an adjustment of parts takes place which designates what kind of spaces are required. The mathematical instrument which produces the adjustment required to select the spaces has a capacity of about five thousand changes. In the first place there are about one thousand changes necessary to properly justify the ordinary newspaper line, providing only one space is ever inserted in the same place. In order to use only one size of space at a time, ten different thicknesses of spaces are required, which is a serious objection on account of distribution. In order to reduce this number, piles of different combinations, made up out of only three

B. M. DES JARDINS.

sizes of spaces, are used, these being the three, four and five-em spaces. The employment of only a few sizes multiplies the combinations, and thereby makes it necessary to increase the power of the mathematical instrument employed. The next motion in the machine consists of the insertion of the newly selected piles in place of the original dividing spaces. This requires a separate series of motions for each word, so that, in the proper disposition of the line, the machine must make from four to ten motions for short newspaper lines. The time of these word motions, for practical work, is about twice the time occupied in handling a type in ordinary typesetting machines, or one-third the time taken by hand.

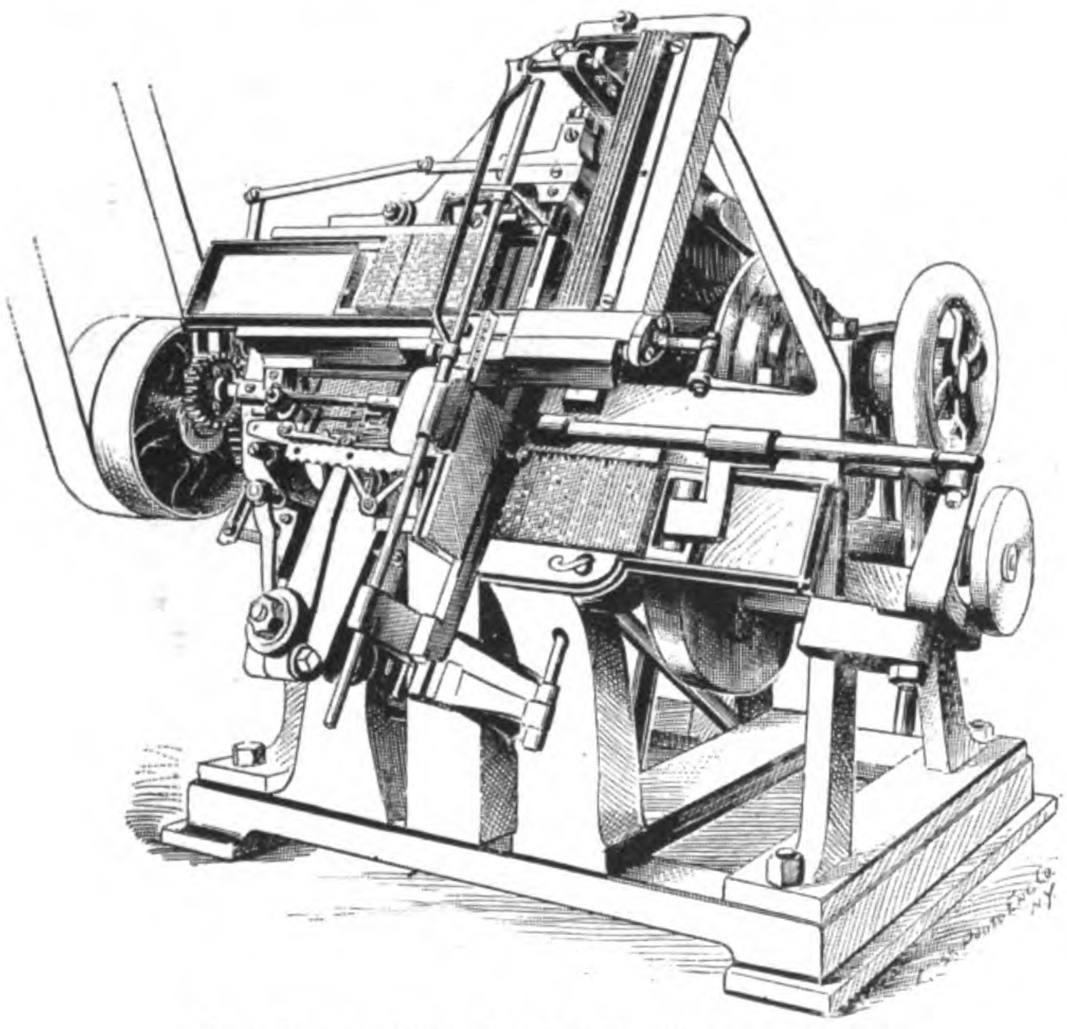
In order to economize time and thereby increase the speed of the machine, the motion of the column and the adjustment of the mathematical device all takes place while the previous line is being handled, so that the speed of the machine is dependent upon the rapidity of transferring the spaces and the correspondent handling of the words. At the end of each line only one motion is lost, that is, for a line of eight words the machine makes nine motions, etc. After the spaces have been inserted into their proper places, a motion throws the

line upon the receiving galley and brings a new one into place. The motions which have just been described are all automatic, that is, the machine does its work without any assistance whatever besides the putting on and the taking off of the galleys containing the columns of matter, which is done by the foreman.

When the galley is empty, or if the machine is required to stop for any other reason, the automatic indicator rings a bell so that the foreman's attention can be occupied at other work till he is needed.

Type is small and delicate, and must be handled by fairly sensitive devices, and any machine which necessitates the separation of the words more than once multiplies a very serious difficulty in the economy of handling such small bodies. Mr. DesJardins had all the requirements for justifying type as early as 1883, and his effort to produce a simple mechanism to handle words and spaces in a quick and positive manner has been one of the main causes of delay.

In his present machine no motion is repeated for the same operation. One touch of the line by the automatic mechanical fingers instantly determines what combination of two neighboring sizes of space piles are necessary, and the machine goes directly to the work of inserting them into their respective places. The calculating device rests upon the line directly, so that there is no possible loss of measurement which would very likely occur if it was necessary to employ intermediate mechanism to communicate the result. The spaces and words are made to meet after the



THE DESJARDINS TYPE-JUSTIFYING MACHINE.

very shortest amount of travel, and when the line is completely justified it only moves a short distance sideways and is landed into the receiving galley. In developing the machine, the most difficult of the problematic parts consisted in the construction of a suitable mathematical instrument, with its large number of possible changes, and the most difficult mechanical feature was the handling of the spaces, in a method which is both rapid and positive.

In Mr. DesJardins' justifying machine, these changes are made only once for each word, and words and spaces are gotten at in such a way that the mechanical motion by which the result is reached is nearly a positive one. In this way he has practically eliminated the only undesirable mechanical feature in the whole process.

The DesJardins machine was largely developed in Chicago. The inventor came here in the fall of 1884, from Kalamazoo, Michigan, expressly to build an operable typesetting machine at the Chicago Model Works, which was an improvement over an experimental model which he brought with him. The model built here was discarded, before it was finished, for another of much larger capacity, which was destroyed in the fall of 1891, when the Arc Light building burned. Upon the destruction of the large machine the inventor was bitterly disappointed on account of the fact that it was not quite completed, and had never been exhibited in operation, and on account of the very large amount of money required to perfect a machine of this kind.

In 1892 he went to Hartford, Connecticut, and there designed and built an independent justifier which resulted in the successful production of the present machine.

A stock company with a capital of $200,000 is now being formed at Hartford, Connecticut, for its manufacture, and the work of preparing the machine for the market will immediately be entered upon.

The owners of the invention, prominent among whom is the inventor himself, will immediately put two independent machines on the market; one of these is a special machine, adapted to a given width of newspaper column, and this will be built to accommodate the requirements of the customer. The other is an adjustable machine capable of handling any length of line, from that used in the ordinary newspaper column to the width required for the page of a book. These two machines will be sold to the general trade. They are calculated to meet all the conditions of the modern printing office, with the exception of the larger dailies, where great speed is required just before the form is closed. In order to meet the latter demand, special justifiers will be built, under contract with the various typesetting machine companies, which will be attached directly to the typesetting machines, and receive the type as fast as it is set. Under ordinary circumstances, this special form of justifier will be used simply to cut the lines up into the required lengths and deposit them on the receiving galley; but when the time approaches for closing up the form, and important matter comes in which must be hurried through, the special machine can be used to justify directly from the typesetting machine, from which it can be transferred directly to the form.

Ten machines will be placed where they will be under the supervision of the owners until they have been thoroughly tested, and then the general market will be supplied in large quantities.

COMPOSITION, CEMENT AND INK FOR RUBBER STAMPS.

George W. B., Cleveland, Ohio, refers to article on rubber stamp manufacture on pages 65 and 67 of the April, 1896, number of THE INLAND PRINTER, and asks for recipes for molding composition, cement and aniline ink. *Answer.* —Molding composition: Finely powdered soapstone, 1 pound 3 ounces; best dental plaster, 1 pound; fine powdered china clay (kaolin), 1 pound. These materials are mixed dry and sifted through a sieve having a fine mesh. A quantity of the composition sufficient to form a mold is placed in a suitable vessel and mixed with a solution formed by dissolving 5 ounces of dextrine in 1 quart of hot water. This is to be used cold, and can be prepared in advance. Enough of a dextrine solution is added to the composition to make a thick dough, a little stiffer than putty, which should be thoroughly but quickly kneaded and smooth and free from lumps. Cement—The stamps are mounted by means of shellac varnish. The cement mentioned in the article above referred to we have not the recipe for, but shellac varnish is said to be efficient. Ink—Good ink is made by using 1 ounce of methyl violet (extra 3 B), and 1 quart of hot glycerine.