

September 23, 1952

## THE EVOLUTION OF A MATRIX BRIDGE

### Model 4 Linotype

The first mixing machine was the Model 4 which was built in 1906 followed by the Model 7 Linotype in 1907, this latter machine being a Model 4 with 36-em length of line. They were the first duplex distributor machines. These particular machines contained a bevel slot for separating the lower magazine matrices from the upper. The upper magazine contained unnotched matrices, while the bevel slot governed those for the lower magazine. No bridge was used, the separation being caused in the distributor box by a male and female pawl, the male pawl allowing the matrix to come through, while the female pawl at the same time stopped the following matrix from coming through.

### Model 9 Linotype - 1911

The next mixer was the Model 9 machine, produced in 1911 and the Model 12 machine produced in 1912, the latter being a Model 9 with 36-em length of line. They were of a four magazine machine variety, the machine, of course, being far more intricate than the Model 4.

The matrices were separated in the primary distributor to the various magazines by a small bridge G-934 containing three projections. All matrices must have the bevel slot in addition to bridge notch for Model 9 and 12 Linotypes. When selecting a bridge one that would eliminate the font slot was always chosen.

Pi matrices on the first Model 9 contained a bevel slot and ran through the lower magazine to a slot and into the pi tube.

On December 11, 1914, Model 9 No. 1849, all pi matrices were then taken off the primary and ran through a pi chute, part No. J-2145.

On August 1, 1929, Machine No. 45163 was the first machine equipped with the four deck stacker and all pi matrices were cut with the same bridge combination as the matrices in the corresponding magazine. They ran on the bar to the pi channel where they dropped and were carried to each individual deck of the pi stacker. This pertains to all pi matrices except those that were too large for the magazine entrance and they are those above size .2109. Any matrix above .250 was too large for the primary and had to be run in the quad box.

On Model 9 machines previous to No. 45163, all the lower magazine matrices had to have the bridge and the bevel and all pi matrices had the font slot only.

Previous to No. 18949, all pi matrices had the bevel slot only.

After No. 45163, all pi matrices carried the bevel slot and full bridge combinations.

Produced on a Davidson

Model 16 and Model 17

The next mixer machine that came out was in 1916, a two-magazine affair and designated as Model 16 and Model 17, the latter being with the auxiliary magazines. These magazines were not of the standard type but required the same type of bridge as the Model 9 for distributing.

Model 24 - 1921

Then came along the Model 24 in 1921 which was the same as the Model 9 but with four auxiliary magazines attached. The matrix bridging for this model was the most intricate of all, using a three piece bridge system, governing notches 1 to 9 inclusive. The center piece contained three projections for distributing the matrices in the main magazine and the end pieces to govern the auxiliary magazine matrices, yet with all these complications, Mr. Francis Watts Lee of the Boston Public Library devised a system of his own and in addition to the five notches on the bottom of a matrix he also placed a notch on the back or reference side of the matrices for his own special use.

Models 25 and 26

The Model 25 machine and the Model 26, which is the auxiliary type, came out in 1924 with a primary distributor and matrices for both magazines were notched and governed by two bridges.

Instructions at the time that they were placed on the market, were to cut five notches, the Notch No. 1 and Notch No. 8 governing distribution of the auxiliary matrices only. When the writer questioned Mr. Dave Kennedy of the Experimental Department at the time as to why we should cut five notches in the Model 25 the reply was "Oh, they might order a Model 26 sometime".

We objected to this because the No. 1 and the 8 notch were very dangerously near the matrix ears and weakened them considerably. However, we underlings were overruled, with the result that later on many fonts were changed because of the damage to the matrices and the writer recalls very distinctly about 100 fonts of matrices being changed on the Pittsburgh Press because of the weakened condition of the ears.

In 1928 the original instructions were rescinded and notches 1 and 8 were entirely eliminated and the auxiliary magazines were controlled by notches 2 to 7 inclusive.

Model 25 and Model 26-A

This machine was improved in 1927 and the primary was eliminated and only one bridge used to govern the matrices, which bridge distributed the matrices in the upper magazine if the bridge cut agreed with the bridge projections. Any matrix that did not correspond with the bridge projections would drop in the lower magazine.

#### Model 29 - Model 30

The Model 29 and the Model 30, the latter being the auxiliary magazine machine, were built with four magazines, and first came into the market in 1937. This is equipped with an automatic bridge containing one projection only. At the same time it also had an automatic font distinguisher, and why the latter, no one seemed to have a satisfactory explanation and after many months of strenuous objection this automatic font distinguisher or rather the visible parts of this automatic font distinguisher were taken off.

In 1940 after 121 of these machines had been produced, of the 72/90 channel type, the writer questioned as to why we should apply this more expensive movable bridge to the two-in-one machine when the cheaper or fixed bridge was all that was necessary and far more versatile. I wrote the New Works Committee that this be eliminated and after a number of arguments, which had no foundation, the fixed bridge was adopted by the New Works Committee as standard for the two-in-one mixing machines. The writer also suggested that the intricate part of the automatic font distinguisher (which required considerable fine setting and which was not taken off at the time the visible parts of the font distinguisher were taken off,) be removed at the same time. The factory at the time also adopted the fixed bridge as standard for the Model 29 two-magazine Linotype irrespective of the fact whether or not it was a straight 90 machine or a 72/90 machine. Only today, September 17, 1952, 28 years after the elimination of the No. 1 and No. 8 notch, I noticed that the dial indicators on mixing machines, still show the No. 1 and 8 positions. These two should have been omitted from our blue prints at the time and production made accordingly. Also the dial shows the notches and numbers for the font slot control which was eliminated many years ago. I would respectfully suggest to the factory that a complete new dial be drawn up.

#### Model 35 and Model 36

The Model 35 and the Model 36 auxiliary machines came out in 1941 and used the same bridge system as the Model 29 and 30's movable bridge for the four-ninety channel magazines and a fixed bridge for the two-ninety channel machines and the 72/90 machines.

Many of the customers today specify fixed bridge on the four-magazine 90 channel machine and do not mix between the second and third magazines, thus really making it a double two-magazine machine or to put bluntly a glorified edition of the Model 4 machine first built in 1906.

The coined phrase "Ain't it a small world" is very true when one realized that a font of matrices cut with the bevel slot for a lower magazine of a Model 4 machine in 1906, can be run in a Model 36 over a bridge containing a projection for the bevel slot.

Where the fixed bridge is used we generally use only one or sometimes two notches, the two notches being used to give a more substantial condition. A very important point to be remembered is that no matrices in two adjacent magazines should bear the same bridge notching.

Each case has to be studied and handled individually. A number of customers have their own system, such as the Boston Public Library had. Vail Ballou of Binghamton also have a special system of their own. In some cases the customer uses the font slot for distribution. There are a number of times when a customer will request a double width projection on the automatic or movable bridge, other times we have been asked to apply a projection that will agree with the Intertype notch.

Auxiliary magazines work in pairs, therefore, the matrices for the first and third auxiliaries are always bridge notched with the universal bridge Nos. 2 to 8 inclusive, whereas those for the second and fourth magazines are not notched.

On the two-in-one Linotype machine, we try to make the bridge notching as simple as possible and use one notch, or as previously said, sometimes two, but if greater mixing facilities are required, then it is advantageous to use the bridge with three projections. This is due to the fact that where we use a one projection bridge we are limited to seven combinations, 2 to 7 inclusive, but if the three projection system is used, then we have about 20 different combinations to play with.

In order to make this matter of bridge notching as clear and as simple as possible, you will find on page 8, a chart of templates showing the positions of the various font and bridge slots.

Where the three projection system is used be sure to always utilize a bridge notch which eliminates the font slot. Where we apply the one projection system we generally try and keep toward the center of the matrix, and by so doing we do not touch the font slot.

Attached you will find a chart showing a combined layout of font slots, Model 9, Model 16 and Model 17 bridge notches, Model 25, Model 26, 29, 30, 35 and 36 bridge notches, also the bevel slot in the Model 9 matrices and lower magazine Model 4 matrices as well as the Intertype notching.

In closing may I expound a theory that I have been trying to get the factory to adopt for many years. I believe we should always deal with projection numbers rather than bridge numbers to avoid confusion and I again suggest to the factory that bridge numbers be dispensed with and that we use the projection numbers only. For instance, it is just as simple to stock under the numbers of the projections such as 3-6-7 instead of bridge No. 3-5-7. To show the fallacy of such handling originally G-934 bridge Nos. 3-8-14-17-19-20-21-25-26-27-28-29-30-31-32-34-35-36-39-40-41 are exactly the same articles in every possible way as G-2286 Nos. 103-108-114-117-119-120-121-102-126-111-109-124-112-118-107-101-105-116-105-106-113-127 respectively.

The part numbers and the projections are all the information that is necessary for all purposes and I sincerely pass this recommendation to those concerned in the factory.

I am not writing this as part of my memoirs, but simply putting this matter in this form so that you may refer to it at any time in the future.

*Castor Jones*  
Machine Section, Order Department

BRIDGE PROJECTIONS

MODEL NINE  
PART NO. G-2286

MODELS 25 - 26 - 29 - 30 - 35 - 36  
Part Nos. Previous to Model 25  
No. 43099 and Model 26 No. 43121  
Use-----G-2890 From these numbers  
and after up to 53531, (June 1939)  
Use Part No.-----G-2998 From  
No. 53531 and after use-----G-4069

POSSIBLE COMBINATIONS

2-7-8  
2-3-5  
2-5-8  
2-5-6  
2-6-7  
3-6-7  
3-4-6  
2-3-6  
3-4-8  
2-4-7  
3-4-7  
4-6-7  
2-3-7  
3-7-8  
4-7-8  
2-3-8  
2-4-8  
3-4-5  
3-5-8  
4-5-8  
3-5-6  
4-5-6  
2-4-5  
2-4-6  
6-7-8

2-3-5  
2-3-6  
3-4-6  
2-3-7  
2-4-7  
3-4-7  
3-6-7  
2-5-7  
2-6-7  
4-6-7  
3-5-7  
2-3-4  
2-4-5  
3-5-6  
4-5-6  
2-5-6  
2-4-6  
4-5-7  
3-4-5

Never use combinations

2-3-4 or 5-6-7

Do not use bridge combinations

5-6-7

Where three projections are used, choose a bridge which eliminates the font slot; if one or two projections are used keep away from font slot where possible. Every case has to be studied.

See separate table for font slot positions.

## INSTRUCTIONS FOR SETTING FONT DISTINGUISHER AND BRIDGE CONTROL INDICATORS

The three indicator plates to the right (from rear of machine) are for use in positioning the matrix bridge. Use the top plate when top or 1st magazine is in upper operating position, the second plate when the 2nd magazine is in upper operating position, and the third plate when the 3rd magazine is in upper operating position.

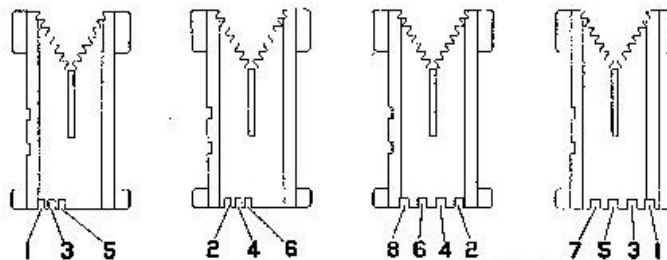
Set the indicator plate for any bridge notch or font slot in the matrices of the magazine in upper operating position, which notch does not appear in the matrices in the next lower magazine. This permits the upper matrices to drop on the bridge and distribute to the upper magazine while the lower matrices will be supported by the bridge, ride over it and distribute to the lower magazine.

To use Model 9 matrices in any upper operating magazine, it is necessary to replace the indicator plate with a plate for use only with Model 9 matrices.

The three indicator plates to the left (from rear of machine) are used, if so desired, to position the font distinguisher blade to prevent wrong fonts entering either of the two magazines in operating position. To use this font distinguisher it is necessary that the indicator plate be set for a bridge notch or font slot common to the matrices in both upper and lower operating magazines. This allows both fonts of matrices to pass the font distinguisher blade. If this feature is not desired, the font distinguisher may be manually turned out of operation.

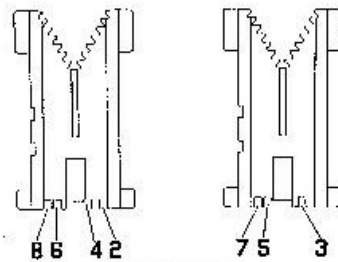
If the font slot portion of the indicator dial is used, the bridge must be replaced by one having a narrower projection. Both kinds are supplied with the machine.

To identify the bridge notches or font slots in the bottom of a matrix, in order to determine the correct indicator plate setting, place a matrix over the templates shown below.



FONT SLOT  
USED ON SINGLE DISTRIBUTOR MACHINES

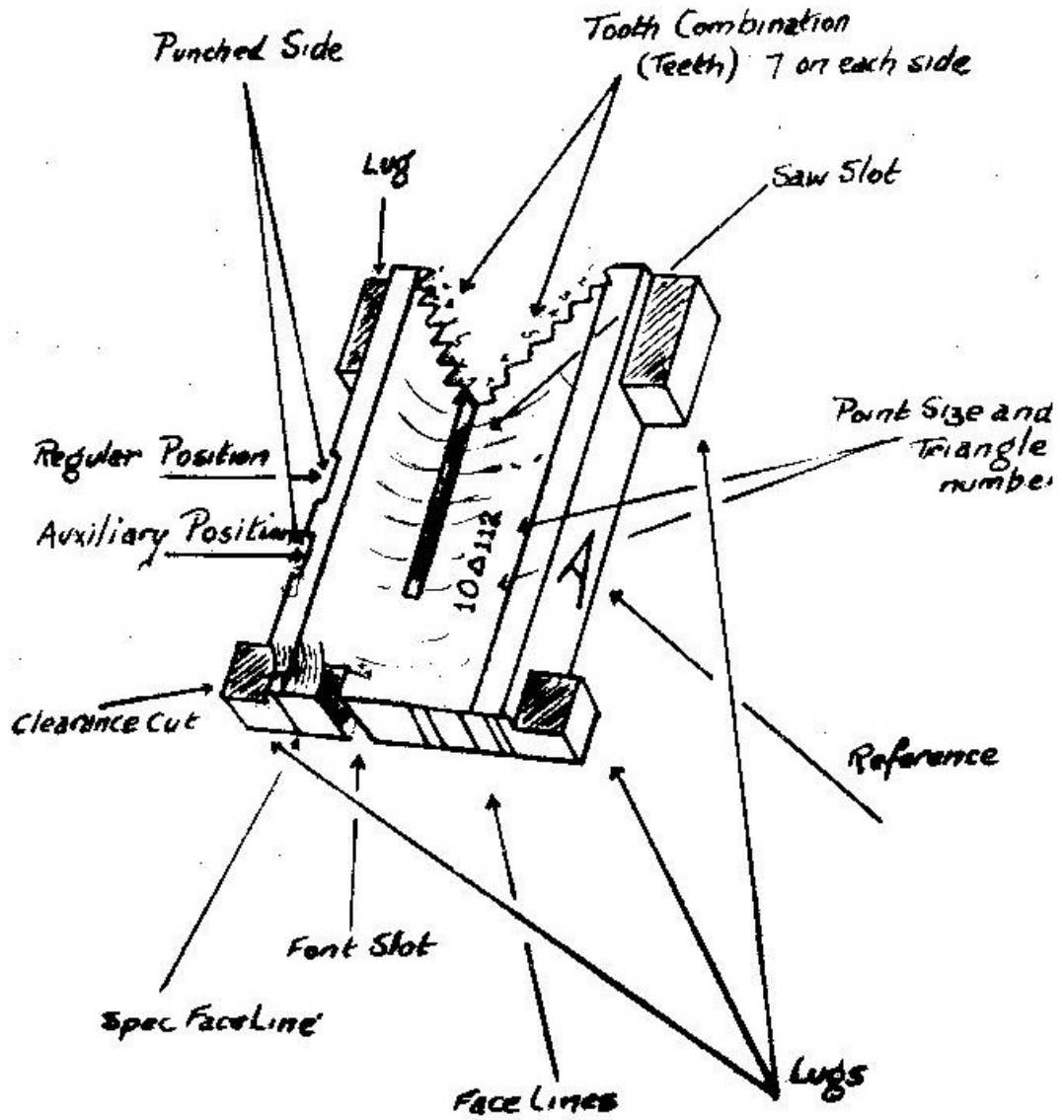
BRIDGE NOTCHES  
MODELS 25 28 29 30



BRIDGE NOTCHES  
MODEL 9

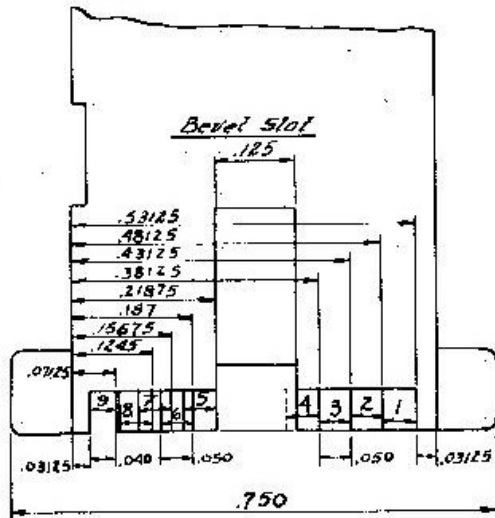
MERGENTHALER LINOTYPE COMPANY, 29 HYERSON STREET, BROOKLYN, N. Y.

# MATRIX TERMS



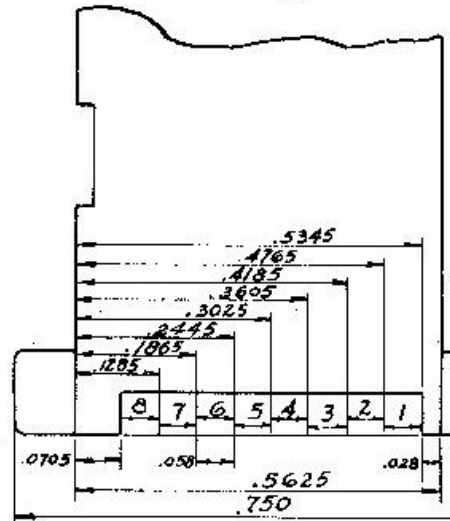
## Bridge Notches Models 9, 12, 16, 17, 24

These Bridge Notches are .050 wide  
except Bridge Notch No 9 which is  
only .040 wide.



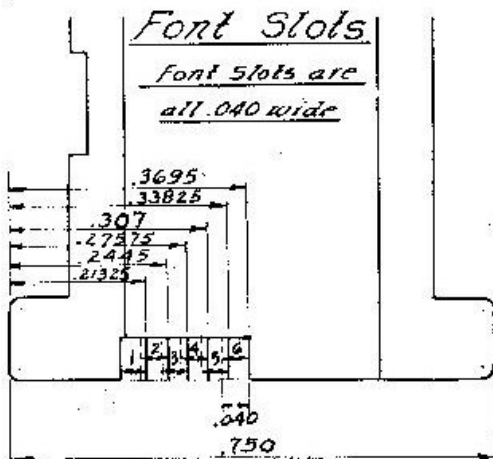
## Bridge Notches Models 25, 26, 29, 30

All Bridge Notches for  
models mentioned above  
are .058 wide.



### Font Slots

Font Slots are  
all .040 wide

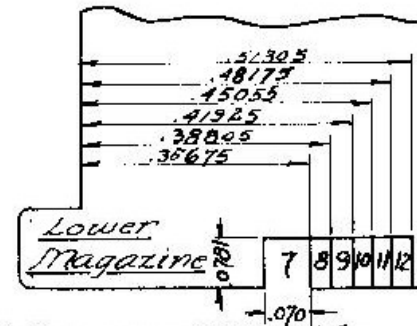
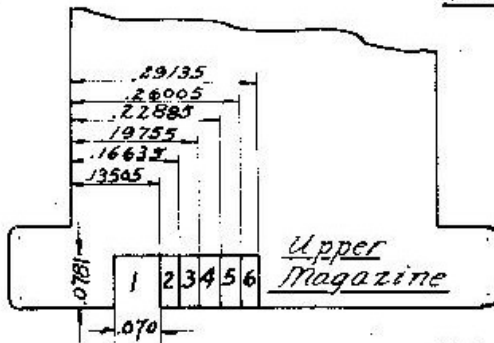


Font Slots used for:-

No	5-11-22-34	Poi
2	6½-10-13-20-26-30-60	"
3	4-7½-7¾-8-8½-16-27-32	"
4	4¾-6¾-7-11½-14-21-28-42	"
5	6-10½-12-24-48	"
6	5½-9-18-36-54	"

## Intertype Corporation Matrices

### Bridge Notches



All Bridge Notches are .070 wide.