

## GLOSSARY OF MONOTYPE CASTER TERMS

**AIR BAR.** A grooved bar on the casting machine which alternately clamps and releases the paper ribbon as it is fed through the machine. When it clamps the paper, air is admitted to the groove and passes through the perforations in the paper to the pipes thus uncovered; these pipes lead to the air pins controlling the movement of the matrix case and normal wedge. Before the paper is unclamped the air is automatically shut off from the bar.

**AIR PINS.** Twenty-eight air pins on the casting machine are lifted, not more than two at a time, by air admitted through the perforations in the paper to bring the matrix for the character to be cast over the mold into casting position, and also to position the normal wedge to give the correct size body when the mold blade is drawn back to cast the type. Three additional air pins control the space sizing mechanism.

**ALLOWANCE FOR SQUEEZE.** Increasing the length of line over the required measure so that, when the type is locked up, the full pressure will come on the type lines and not on rules or leads between the lines.

**AUTOMATIC CUTTER UNIT.** Part of the lead and rule unit for automatically cutting the product of the lead and rule mold exactly to any desired length from six picas to twenty-five inches or longer if tripped by hand. The shorter lengths are caught in a box; those longer than nine picas are automatically stacked.

**BLANK MATRIX.** A matrix without a character driven in the lower end (opposite the cone-hole), used for casting quads and spaces. If the blank has no cone-hole, it produces a low quad or space.

**CASTING MACHINE.** The composing machine casts and composes type in automatically justified lines in any size from five to twelve-point inclusive (18 point inclusive if the fourteen and eighteen point composition unit is applied) and in any width up to sixty-picas. By the ribbon perforated at the keyboard it is controlled in all its operations by the keyboard operator. When equipped with the display type unit, it is the standard monotype composing machine and type caster, and may then be used also for making type to be set by hand, all sizes including thirty-six point, the same as the type & rule caster. When equipped with the lead and rule unit, it will also cast continuous strips of rules and high and low leads and slugs, any size from two to twelve point, and automatically cut them to any length from six picas to twenty-five inches.

**CENTERING PIN.** A rod carried in an adjustable bushing in the bridge of the casting machine. The lower end of the centering pin is tapered to fit exactly the cone-hole of the matrix, which it enters at each revolution of the machine to locate the matrix accurately, so that the character cast from it will be properly positioned on its body, and to clamp the matrix on the mold while the type is cast. After the character is cast the centering pin raises out of the cone-hole of the matrix for the character just cast, and the matrix case moves to bring the matrix for the next character over the mold into casting position.

**CENTERING-PIN BUSHING.** An adjustable holder for the centering pin that can be moved right or left front or back, and then locked in the required position. The stand that carries the bushing is adjusted in changing from one matrix case to another, to position correctly on their bodies the characters

of the font to be cast, both point-ways (for alignment) and set-ways (for side bearing.)

**CENTERING-PIN MICROMETER.** Two screws on the casting machine for adjusting the bushing carrying the centering pin when lining up. One screw adjusts the centering pin for alignment, the other for side-bearing. The heads of these screws are graduated to correspond with the graduations on the head of the screw on the lining gage. Thus the centering pin is quickly adjusted by turning the micrometer screws as many notches as the graduations on the lining gage indicate that the character needs to be moved on its body to bring it to correct position.

**CHANGE BOX.** A wooden box for temporarily storing matrices taken from a matrix case to make room for special characters. The box has fifteen slots corresponding to the fifteen rows of the matrix case, and is provided with a sliding lid to protect the matrices.

**CLEANING ROD.** A metal rod about three feet long with a handle on the upper end and on the lower end a perforated cup in which is placed the metal cleaner; the rod is then used to stir the molten metal in the melting furnace, thus carrying the metal cleaner to the bottom of the pot and mixing it thoroughly through the metal to bring the dross to the top.

**COLUMN PUSHER.** A mechanism on the casting machine that pushes the completed line, after it has been pulled forward from the type channel by the line hooks onto the galley. To permit this, the rule lifts so that the column pusher may pass under it.

**COMB.** A toothed bar in which are carried fifteen composition matrices; fifteen of these combs are carried in a matrix case. The matrices are grooved to fit between the teeth of the comb and also to receive half the thickness of the front of the comb in which they are carried, and, on the opposite side, half the thickness of the back of the comb for the next row of matrices. Note: For fourteen and eighteen-point composition there are but ten combs in the matrix case; seven of these have teeth spaced 2" and three have teeth spaced 3"; the principle, however, is the same as the standard combs.

**COMPOSITION MATRIX HOLDER.** A holder which takes one composition matrix at a time for casting sorts. It is used with either regular composition matrices or the matrices leased for sorts casting, for sizes twelve-point and smaller.

**COMPRESSOR.** An air pump for furnishing compressed air, as from twelve to fifteen pounds pressure, to drive the keyboard and to control the casting machine. The compressor is equipped with an automatic governor so that when no air is being used, the compressor runs "light" without compressing air.

**CONDENSING TANK.** A tank used to cool the air, after it leaves the compressor, to condense the moisture in the air, which moisture is collected in a trap and thus prevented from being carried by the air into the keyboard and caster. The air from the compressor passes through a coil in the condensing tank before it goes to the storage tank. This coil is cooled by the circulation of water around it; the water for the tank comes from the main water supply. The tank should be hung so that its bottom is about ten feet above the floor on which the casting machine is placed, so that the water from it may be used for

cooling the molds and also in the water jacket of the compressor.

**CORRECTOR.** A compositor who knows the relative unit values of monotype characters and who uses this knowledge when correcting monotype composition by hand at the case, to save time and labor.

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**CROSS BLOCK.** A reciprocating block in the mold, attached to the right end of the type carrier by a coupling, and moving right and left with it. The cross block forms one side of the mold opening in which the type is cast; in the cross block is also cast the jet which is sheared from the foot of the type and returned to the melting pot by the movement of the gate pusher of the cross block as the block moves to the right, so that the carrier can receive the type which is pushed into it by the forward movement of the mold blade.

**CROSS GIRT.** The part of the casting machine on which the air bar clamps the paper and from which the air pipes lead to the air pins.

**DEAD LINE.** A line "killed" by the keyboard operator because it contains an error that cannot be easily fixed by the corrector. If the error be in the first quarter of the line, the operator may "kill" this portion of the line by turning back the ribbon and cancelling the characters struck with a justifying key to lock the pump and prevent these characters from being cast. If the error be in the last three-quarters of the line, it saves time for the operator to strike an eighteen-unit character (a cap, diphthong or fraction) to fill out the line and then justify as usual. Thus, the caster is not stopped and the "dead line" is removed by the corrector.

**DEADWOOD.** Characters set by the keyboard operator, of the proper width, to be replaced by rules, initial letters, side heads, etc.

**DISPLAY TYPE.** The larger point-sizes of type (above 12-point) cast as sorts to be set by hand from the case, instead of being cast automatically justified lines.

**DISPLAY TYPE UNIT.** An attachment for the casting machine required for casting type from sorts matrices and for casting leads, rules, and slugs. It is furnished as part of the type set caster and can also be applied to the composing machine. It provides for, (a) Increased stroke of the mold blade; (b) Increased pump capacity; (c) Increased pressure on entering pin; (d) Holder for sorts matrices; (e) Type channel blocks for large type; (f) Wedges adjustable by hand. It includes also the molds for casting type from sorts matrices and the speed regulating unit.

**DISTRIBUTION.** Returning the types to their respective boxes in the cases after printing. Necessary for display type only in Monotype equipped shops.

**DOUBLE MATRIX.** A matrix 2"x4" (double the size of the ordinary matrix) carried in the matrix case with the regular matrices (2"x2"), for producing figures, or other characters, up to thirty-six points in size in regular composition.

**DROSS.** Oxide of lead and dirt that must be removed from metal in the melting pot of the casting machine and also from the type melted in the melting furnace to be cast into pigs.

**EIGHT-UNIT LEADER.** A leader of exactly the same face as the nine-unit leader, but cast central on a body eight units wide. (It is not a 9-unit leader matrix carried in the eight-unit row.) It is used to bring the unit wheel to even ems when the unit indicator shows any number from five to eight inclusive.

**ELECTROTYPE GUARDS.** One product of the tie up slug mold, consisting of a twelve-point slug with a recess for string in the side and a six-point electrotype height bearer cast at the side of the body. Like all products of the lead and rule mold family, these guards are cast in continuous strips of any length and automatically cut to any desired length from six pins to twenty-five inches.

**EM.** The width of the widest character (18-unit) of the font; cap M, for example. The monotype em is square only when the set of the face is the same as its point-size; for example, 10-point No. 8, which is ten-set. The em scale of the keyboard always indicates ems of the same set as the justifying scale in use.

**EM-QUAD.** A space eighteen units (1 em) wide. An em-quad key is carried at the bottom of both right and left keybanks for convenience. In the matrix case, however, there is but one matrix for the em-quad and this is always carried in the right front corner of the case (operating position); that is, at the intersection of the right and front rows. No perforations are made in the ribbon by the em-quad keys.

**EN QUAD.** A fixed space nine units wide. An en-quad key is carried at the bottom of both right and left keybanks for convenience. In the matrix case, however, there is but one matrix for the en-quad.

**EXTRA CHARACTERS.** Any character used but not carried in the matrix case is an extra character; when one of these is required, the operator strikes a key for a character of the same width; this is exchanged for the required character by the corrector without affecting the justification.

**FONT.** A full font consists of the composition matrices for one point-size of a face, including caps, small caps, lower case, and figures of roman, and caps, lower case, and figures of italics, also punctuation marks, signs, fractions, etc., that is, the two hundred and twenty-five matrices, including blanks for spaces, required to fill the matrix case. A partial font consists of caps, lower case, figures, and points, from seventy-two to eighty-two characters, depending upon whether ligatures are supplied. A few partial fonts consist only of caps, points, and figures, about forty-six characters; or small caps only, twenty-seven characters.

**GALLEY MECHANISM.** That part of the casting machine which pulls the assembled line out of the type channel and places it on the galley.

**HEIGHT-TO-PAVER.** The distance from the surface on which the foot of the type rests to its face; that is, the surface which takes ink and prints on the paper. Height-to-paver equals 9186". To determine whether a mold will produce type of the proper height-to-paver, measure the high quad; if this measures less than 886" for a composition mold, or 866" for a sorts mold (for use with sorts matrices), the mold should be restored to height.

**JUSTIFYING SPACE.** The space produced by the justifying-space bar. These spaces are counted by

the keyboard as four units, and the size they are cast (never less than the size they are counted) is determined by the justifying keys struck at the end of the line in order to distribute evenly over these spaces the amount the line is short of the required measure after the last character for the line has been struck. In double-justified matter the shortages for a section in that section of the line to justify it to its measure, without regard to the justifying spaces in another section of the same line. With constant justification justifying spaces become four-unit fixed spaces of the set in use; with three-eight justification justifying spaces become the equivalent of six-unit spaces. NOTE: With the fourteen- and eighteen-point composition unit the justifying space is counted as three units, and this is the minimum size justifying space cast on the casting machine; with the wide-spacing unit the justifying space is counted as seven units and this is then the minimum size justifying space cast.

**JUSTIFYING WEDGES.** Two wedges at the casting machine which lie between the space transfer wedge and a fixed abutment. They are controlled by the perforations made by the justifying keys at the keyboard and, since these are the first perforations presented to the casting machine for a line, these wedges are set to make the justifying spaces the size required for the line before a character in the line is cast. Each position of the front wedge 10D, as it is moved from right to left, adds 0075" to the size of the justifying space; the increment for the rear wedge 11D is .0005". When casting sorts of the smaller sizes, these wedges back up the normal wedge 47S for all characters and spaces. For larger sizes of sorts, the rear justifying wedge 11D is replaced by the special justifying wedge 46S. For sorts cast, the wedges are set by hand. With fourteen- or eighteen-point composition the regular justifying wedges 10D and 11D are replaced by the special justifying wedges.

**JUSTIFYING-WEDGE GAGE 46S1.** A bar for setting the justifying wedges by hand when casting sorts. It is graduated to correspond with the teeth of the justifying wedges, and is numbered on every alternate graduation from one to eight inclusive, the intermediate lines on the gage being half graduations; that is, the second graduation from the left is  $1\frac{1}{2}$ . When used to set the rear justifying wedge 11D the graduations represent .0010" difference in the width (set-size) of the type for each numbered graduation, or .0005" for each half graduation; for the front justifying wedge 10D the numbered graduations represent .0150", or .0075" for each half graduation. When used to set the display justifying wedge 46S, which replaces the rear justifying wedge 11D, the graduations represent one-eighth of a point, half graduations one-sixteenth of a point. In the right end of the gage is a hole which fits over a lug on the left end of the wedges. The reference mark for the gage is the left end of the transfer-wedge-operating-rod-guide cap.

**KERN.** The overhang of the character beyond the body on which it is cast. Monotype type may kern at the right or left for certain italic characters, for double "g", and at the top for figures cast from the double matrix.

**LEAD AND RULE MOLDS.** These molds are used with the lead and rule unit and include all molds for casting in continuous strips of any length, rules, and high and low leads and slugs of any point-size from two to twelve inclusive. They work on the principle of casting and welding; each section as

cast is welded to the section previously cast, and the strip, as fast as completed, is delivered toward the right of the machine where it is cut to length by the automatic cutter unit.

**LEAD AND RULE UNIT.** An attachment which can be applied to either the standard monotype or to the type & rule caster for producing rules, high and low leads and slugs, tie-up slugs, and electrolyte guards in continuous strips of any length from the same metal used for casting type. The lead and rule molds and the automatic cutter unit are part of this lead and rule unit.

**LEADERS.** There are four different size leaders in common use—eight, nine, ten, and eighteen units in width. The eight- and ten-unit leaders are used to bring the unit wheel to even ems or half-ems. The nine-unit leader is used in some tabular work instead of a decimal point, also to bring the unit wheel to even ems, and, in the larger point-sizes (12-point, for example), it is sometimes used in combination with the eighteen-unit leader in leading out, to prevent overheating the mold if a hard metal is used and there are many leaders in a line. The eighteen-unit leader is used for leading out after the unit wheel has been brought to even ems by the use of the eight-, nine-, and ten-unit leaders. In some very narrow measure matter, such as baseball scores in newspapers, it is sometimes necessary to use special leaders—the five-, six-, and seven-unit; do not use these special leaders if it is possible to avoid it.

**LEADING.** A face is said to be leaded when it is cast on a larger size body, point-wise, than that for which it was designed, in order to save hand leading. When a face is thus cast on a larger body, it must be lined up by the line standard for the body-size, not the point-size of the face. Faces cast on the leaded body line at the bottom with faces designed for that point-size; for example, eight-point faces cast on ten-point body line with ten-point faces.

**LINE HOOKS.** A mechanism on the casting machine that pulls the completed line from the type channel forward, in front of the galley, so that the column pusher may push the line to the right onto the galley; to permit this, the rule lifts and then descends to prevent the line falling to the left when the column pusher withdraws.

**LINE STANDARD.** A hardened steel measure used with the lining gage in lining up (adjusting the stand that carries the centering-pin bushing) to position the faces on its body. The point-size of the mold determines the standard to use. The thickness of the standard equals the point-size of the mold, expressed as a decimal, plus .005"; thus, the standard for a ten-point mold is .105" thick (.100" plus .005" equals .105"). In lining up, the stand that carries the centering-pin bushing is adjusted so that, when the type is compared with the line standard on the lining gage, the distance from the bottom of the serif of a cap H to the side of the type opposite the nick equals the thickness of the line standard.

**LINING GAGE.** A gage with steel knife edge, adjustable by a micrometer screw, used with the line standard in lining up (adjusting the stand that carries the centering-pin bushing) to position the face on its body. The graduations on the micrometer screw of the lining gage correspond with the notches on the centering-pin micrometer screw, so that, in lining up the latter is moved as many notches as the graduations on the lining gage indicate the character is out of alignment.

**LINING UP.** Adjusting the stand that carries the centering-pin bushing so that the face of the type will be properly positioned on its body. In lining up

a font for composition, one character only (the cap H) is lined up; when casting sorts, each individual character should be tested. The line standard and lining gage are the tools used for lining up

**LOW LINE.** A few abnormally tall faces (6-point No. 56J, for example) with short descenders are cast on the low line; that is, .005" below standard matrix line.

**MAIL-LIST FACES.** These, like typewriter faces, have all characters, points, and figures on the same width body. Use at the keyboard the typewriter attachment and its corresponding wedge at the casting machine; thus all characters are counted and cast nine units wide. Justifying spaces are not used with mail-list faces, consequently no justifying scale is required.

**MATRIX.** For composition: a piece of hardened bronze, 2" square and 7/16" high. In its lower end is driven, to a depth of .030", the character it is to produce, and in the upper end is bored the cone-hole in which the taper end of the centering-pin seats when the matrix for the required character is brought to casting position. The sides of the matrix are slotted to fit between the teeth of the combs which carry the matrix in rows in the matrices case.

**MATRIX CASE.** A steel frame with an opening 3" square in which is carried a font of composition matrices, 25 characters and blanks, arranged in a square with fifteen matrices on a side. The perforations in the ribbon cause the casting machine to move the case to the right or left, forward or back, to bring the matrix for the character required to casting position. Within the case the matrices are carried in combs which fit in notches in the sides of the opening in the matrix case. To change faces, the font to be replaced is removed from the casting machine complete with its matrix case and the new font in its matrix case is substituted. To change matrices in the case, the cover plate is taken off the back of the case and combs and matrices lifted out.

**MATRIX CASE ARRANGEMENT.** The location of the 25 matrices (characters and spaces) in the matrix case. The arrangement depends upon the number of alphabets used together, and whether the bold face used be extended or condensed; also whether double matrices are used, or modified characters to obtain "nut-body" figures on tabular work with faces whose sets are not the same as their point-size.

**MATRIX SYMBOLS.** Symbols composed of letters and figures stamped on the sides of the composition matrix to indicate the point-size, set-size, series number, and to prevent confusion of matrices for similar characters; for example, lower case and small cap x.

**MELTING FURNACE.** Used for remelting type, cleaning it and casting it into pigs for the casting machine.

**MELTING POT.** The part of the casting machine in which the metal is melted and from which it is forced into the mold by the pump. The melting pot is heated by gas burners beneath it (kerosene or gasoline may be substituted if necessary). The melting pot holds about fifty pounds of metal.

**METAL CLEANER.** A compound of the following proportions by measure: Beef tallow, 4 parts; sal ammoniac, 4 parts; powdered resin, 1 part. This is used in the cup on the lower end of the cleaning rod for cleaning the molten metal in the melting furnace; this insures that the cleaner will be carried through the metal to the bottom of the pot and will free the metal from dirt and froth.

**MICROMETER.** An instrument used for measuring the point-size and set-size of type by the movement of a screw; graduations on the frame, in which the screw works, permit of measuring accurately the amount the screw is moved.

**MICROMETER-WEDGE ADJUSTING SCREW.** An adjusting screw on the casting machine used to adjust exactly the set-size of type. This screw moves the micrometer wedge, the abutment for the space and type transfer wedges.

**MODIFIED CHARACTER.** A character which (because of change in unit-rows to meet special conditions) is redesigned so that it may be cast on a narrower or wider body. NOTE: This must not be confused with a character which, without being redesigned, is placed in a unit-row wider than that for which it is designed and cast with a shoulder to the left of the character.

**MOLD BLADE FOR TYPE MOLD.** This forms the rear side of the opening in the type mold in which type is cast. The amount the blade draws back for a character depends upon the position of the normal wedge and determines the width line-ways (set-size) of the type-body. The thickness of the mold blade itself determines the thickness of the type-body column-wise (point-size). After a type is cast, the mold blade pushes it out of the mold into the type carrier which has moved to the right to receive the type.

**MOLD-BLADE-ABUTMENT SCREW.** An adjusting screw on the casting machine for approximately sizing the type in changing from one set to another (changing normal wedges); the size is accurately determined by adjusting the micrometer-wedge adjusting screw.

**MOLD-BLADE-ABUTMENT-SCREW PACKING.** A packing piece inserted between the mold blade and its abutment screw when casting the smaller point-sizes (19 points or less set-ways) with normal wedge 478. When casting sorts more than nineteen points set-ways, the packing piece is removed. The packing piece is seventeen points thick, so that, with the wedge in a given position, removing the packing piece increases the set-size seventeen points.

**NORMAL WEDGE.** A wedge used in the casting machine to control the set-size (width) of the type. Its right end (in casting position) is tapered to vary the type sizes; its central portion is toothed so that its locking pin can hold the wedge in position, after it is moved by the lug on its left end to present the required thickness of its tapered portion to the mold blade. The normal wedge moves, right and left, with the matrix case and determines the amount the mold blade draws back to allow for the width of the character cast from the matrix brought to casting position when the wedge is moved. The normal wedge must correspond in set with the set of the justifying scale used at the keyboard when the ribbon is perforated and also in arrangement of unit-rows with the stopbars used at the keyboard. For sorts casting a special display type normal wedge 478 is used; this is positioned by hand instead of automatically.

**NORMAL-WEDGE LOCKING PIN.** A rod whose lower end is wedge-shaped to fit in the toothed portion of the normal wedge in which it seats to hold the normal wedge in position while the mold blade is drawn back and a type cast; then the pin blade is drawn back and the normal wedge may be shifted to its next position and, after the normal wedge has come to rest, the locking pin again seats and holds it for the next type cast. When casting sorts, the locking pin is raised by hand to shift the display type normal wedge 478.

**NOZZLE.** The part of the pump that seats in the conical opening in the bottom of the mold, just before a type is cast, and through which metal is forced into the mold. After the type is cast, the pump descends and withdraws the nozzle to prevent it being chilled by the continuous contact with the water-cooled mold.

**NUT-BODY FIGURES.** Figures whose set-size (width) is half of their point-size; thus, six-point nut-body figures are three points wide.

**ONE-UNIT-OF-ONE-SET.** The value of this expressed in inches is .0007685", and this is the basic value on which all the monotype calculations are based. It is a theoretical size obtained by first dividing a twelve-set face (which is 12 points wide, or .166") into twelve face equal parts to find the value of eighteen units of a one-set face. This is again divided by eighteen to find the value of one unit of this one-set face thus:

$$.166" / 12 \div 18 = .0007685"$$

**PAPER RIBBON.** A strip of paper four and five-sixteenths inches wide, with holes uniformly spaced along both edges to fit on the teeth of the paper feed wheels of the keyboard and the casting machine. The characters struck by the keyboard operator are recorded on the ribbon by the perforations (2 or 1 for each character, none for the em-quad) made by the punches when a key is depressed. The location of these perforations, across the width of the ribbon determine the character to be cast by permitting air, at the casting machine, to pass through them into the air pipes that control the movement of the matrix case. For each key struck, or character cast, the matrix is advanced by the keyboard or casting machine one marginal perforation. In short, the ribbon enables the keyboard operator to control absolutely the paper feeds by automatic casting machine. As the product of the keyboard it is wound on a spool which, when the take is completed, is placed on the casting machine. As it feeds through the paper feeder it winds on a spool from which it may be taken and recast for matter that duplicates, or saved for repeat orders. This paper is supplied in rolls about four inches in diameter.

**PAPER TOWER.** The mechanism of both the keyboard and casting machine that carries the paper ribbon and advances it one marginal perforation for each character, or space, struck at the keyboard or cast at the casting machine.

**PISTON.** The plunger in the pump mechanism of the casting machine. When a type is to be cast, the piston makes its down stroke, forcing metal up into the mold.

**PISTON.** One member of the perforating mechanism at the keyboard. These pistons are located in the piston block and, when a key is depressed, air is admitted beneath its pistons, which rise and drive their punches through the ribbon, making the perforations to indicate the character struck.

**POINT.** This is the unit of measurement for type sizes, thickness of rules, leads, etc. Seventy-two points (6 picas) are assumed to equal one inch, actually they are .004" less than this.

**POINT-SIZE.** The thickness of a type-body measured "columnwise". This is measured in points.

**POINTWAYS.** The dimension of a type that measures its size "columnwise"; that is, the distance from the nicked side to the opposite side of the body.

**PRESSURE GAGE.** Placed on the storage tank so that the governor on the compressor may be set to prevent the air pressure from rising above fifteen pounds.

**PUMP.** The mechanism for forcing the metal into the mold to form the type. It consists, essentially, of the pump body and piston (working in the pump body), which are partly submerged in the metal in the melting pot. The piston makes a stroke for every revolution of the casting machine unless the pump is locked by hand or automatically by the pump lock when the justifying wedges are positioned.

**PUMP LOCK.** The mechanism which uncouples the connecting rod between the pump-cam lever and the pump, so that the pump does not operate; thus the pump is locked automatically whenever a performing action made by a justifying key is presented to the casting machine to position a justifying wedge. The pump lock may be operated by hand at any time.

**RULE.** That part of the casting machine that closes the open (left) end of the galley. When a completed line is pushed onto the galley by the column pusher, the rule rises so that the line may pass under it; as the pusher withdraws, the rule descends to close the galley.

**RULE MATRIX.** A steel matrix which clamps on top of the lead and rule mold when casting rule. Rule of any face may be cast for the body-size of the mold by changing matrices, and a different matrix is required for each point-size mold even for the same face of rule.

**SAFETY VALVE.** Attached to the storage tank to prevent the air pressure rising above fifteen pounds if the governor on the compressor fails to work.

**SET.** The width of the eighteen-unit characters of a face expressed in points and fractions of a point. The set of a face indicates whether it is extended or condensed.

**SET EM.** A unit of measure which point-ways is the same as the point-size of the face being measured and setways is the width of the widest of eighteen-unit characters of the face being measured. Thus, for eight-point No. SA (8 $\frac{1}{2}$ -set) whose eighteen-unit characters are eight and one-half points wide, the set-em would be a rectangle eight points high and eight and one-half points wide.

**SET-EMS SYSTEM OF MEASUREMENT.** The system of measurement that takes into account the fact that some faces are lean and others fat. Thus, to measure any matter by the set-ems system, multiply the measure, expressed in ems of the set of the face, by the number of lines, and the result will be the number of set-ems in the matter.

**SET FACTOR.** Used to compare the relative width of characters in making special matrix case arrangements; it is the set of the font to which the character belongs, multiplied by the unit-row for which it is made.

**SET-SIZE.** The width of a type-body measured "linewise." This is expressed in points if applied to a complete font; when it is applied to individual characters it is expressed in thousandths of an inch.

**SETWAYS.** The width of a character, or characters measured "linewise".

**SIGNAL CHARACTERS.** Black rectangles of different widths used to indicate that special characters, not carried in the matrix case, are to be substituted for these signals by the corrector at the case without affecting the justification; this substitution should be made before the first proof is taken. To allow for any width character, five matrices are required (1 each for 5-, 6-, 7-, 8-, and 9-unit rows) and five keys must be provided for these signal characters by capping.

**SORTS MATRIX.** A flat matrix used for casting type for the cases in sizes from fourteen-point to thirty-six-point (also for a few faces below fourteen-point that are so extended setways that they will not go on a 2" cellular matrix).

**SORTS MATRIX HOLDER.** A holder for sorts matrices. It holds one matrix at a time and takes the place of the regular matrix case when casting sorts from fourteen- to thirty-six-point. By using a special slide and its special abutments in this holder the alignment of the type may be changed any desired amount; for example, when casting figures or characters on a smaller point-size body than that for which they were designed.

**SPACE.** A type shorter than type high so that it will not print, used for filling in between words, etc. Either high or low spaces may be used: the former, if the matter is to be electrotyped; the latter, if printed directly from type. High spaces are also used to support the kern of characters cast from double matrices. The high space is .030" less than type high; for sizes fourteen-point and larger cast with the sorts mold it is .060" less than type high; the low space is shorter than the high by the thickness of the top mold blade.

**SPACE TRANSFER WEDGE.** A wedge at the casting machine controlled by the perforation in the ribbon made by the justifying-space bar or the justifying-space-punch key. When this perforation is presented to the caster the space transfer wedge supports the normal wedge in casting position; without this perforation the type transfer wedge supports the normal wedge. The space transfer wedge lies on top of the transfer type wedge and the thickness of the two together equals the thickness of the normal wedge. They are called "transfer wedges" because, through the mechanism controlled by the perforation made by the space punch, they transfer the support for the normal wedge from the fixed abutment to the justifying wedges, which in turn are supported by an abutment. **SUMMARY.** In casting characters or spaces the same width as they are counted by the keyboard the space punch perforation is not presented to the caster and therefore the size of the character to be cast is determined by the position of the normal wedge supported by the type transfer wedge and its fixed abutment. In casting justifying spaces or characters with justification added, the perforation made by the space punch causes the space transfer wedge to take the place of the type transfer wedge as the support for the normal wedge, and consequently the set-size of the space or character depends first, upon the position of the normal wedge and second, upon the position of the justifying wedges, which support the space transfer wedge. When casting sorts the space transfer wedge backs up the normal wedge

478 for all characters and spaces in order that the set-sizes may be varied by using the justifying wedges.

**SPEED REGULATING UNIT.** All type & rule casters and all composing machines with the display type unit for casting type fourteen-point and larger, are equipped with this speed regulating unit. By shifting three levers this attachment gives eighteen speeds through gearing and the nineteenth speed direct with all gears cut out.

**SPOOL.** The paper, as it is perforated on the keyboard, is wound on a spool and unwound from it as the ribbon passes through the casting machine. A different spool, on which the paper is wound at the caster, has but one flange, so that the ribbon may be slipped from it; thus, no spools are required for ribbons kept for repeat orders.

**STANDARD MATRIX LINE.** Monotype faces used for casting type in justified lines, regardless of their point-size, line perfectly when cast on the same size body. This is because, referring to the face of the matrix that seats on the mold, the distance from the lower serifs of the cap H to the side of the matrix above the top of the letter (looking at the face of the matrix) is the same for all point-sizes, which gives it the name "standard matrix line." **NOTE:** A few faces 6-point No. 56J, for example, with unusually high caps, are made to low line which is .005" lower than standard line.

**STOP MOTION.** That part of the galley mechanism of the casting machine that prevents improperly justified lines being placed on the galley. When a line too long or too short to lock up properly is presented to the galley, the caster stops automatically, because the incorrectly justified line causes the stop motion to shift the belt from the driving to the loose pulley. The keyboard operator takes advantage of this stop motion by making the first line keyboarded (last line cast) one em-leader long; this stops the casting machine, thus notifying the caster operator that the take is finished; the em-leader is then removed by the caster operator and the line is the correct length.

**STORAGE TANK.** Used to equalize the pressure of the air from the compressor and also to remove any moisture that may not be taken out by the condensing tank as the air passes through it from the compressor to the storage tank. The storage tank has a pet cock at the bottom which should be opened every morning to blow off any moisture that may have collected. A pressure gage is attached to the tank and also a safety valve to prevent the pressure rising above fifteen pounds if the governor on the compressor should fail to work. The compressor, condensing tank, and storage tank should be placed as close together as possible; if the keyboards or casting machines are more than fifty feet from the compressor a second storage tank at the end of the air pipe should be used; the air from this second tank goes directly to the machines.

**STRIP RULE.** A continuous strip of rule, the product of the lead and rule mold, cast in any length from the same metal used in composition, and cut to exact lengths, as delivered, by the automatic cutter unit.

**TEN-UNIT LEADER.** A leader of exactly the same face as the nine-unit leader but cast central on a ten-unit leader (it is not a 9-unit leader matrix carried in the 10-unit row). The ten-unit leader is used to bring the unit wheel to even ends when the unit indicator shows any number from one to four inclusive.

**THREE-EIGHT JUSTIFICATION.** Striking the No. 3 justifying key in the upper row and the No. 8 key in the lower row causes the casting machine to cast the justifying space as a six-unit space of the set of the normal wedge used, because this setting of the justifying wedges exactly compensates for the space transfer wedge being .0184" thicker than the type transfer wedge. Thus with three-eight justification and the normal wedge in its six-unit position, for casting justifying spaces, the mold blade is pulled back exactly the same amount whether the normal wedge is supported by the type transfer wedge or by the space transfer wedge, and consequently three-eight justification with any set produces a six-unit space of that set. **NOTE:** This is not true for sets larger than twelve-set, for with these a special setting of the space transfer wedge is required.

**TIE-UP SLUG.** A twelve-point slug with a recess in the side for the string. Effects great savings in tying up pages, for the string remains in place when the page is locked up. These slugs are the product of the tie-up slug mold and may be either low or high or for guards for electrotyping. They may be cast with a six-point face on one side of the body.

**TIE-UP SLUG MOLD.** This mold is of the lead and rule mold family, but differs from the others in that its product is a slug twelve points thick with a recess in one side in which the string fits when tying up a page. This mold will cast low or high slugs or by the use of a special matrix will cast electrotype guards.

**TRIP THE GALLEY.** To trip the galley means to start the galley mechanism so that a completed line will be taken from the type channel of the casting machine, where the individual types composing the line are assembled, and placed on the galley; any metal-bottomed galley may be used. The galley mechanism is operated by the galley cam, a disc which revolves about a vertical axis and has three separate cam surfaces that give the following motions: (a) the line hooks move forward, pulling the completed line in the type channel toward the operator and opposite the open end of the galley; (b) the rule lifts so that the line may be pushed under it onto the galley; this done, the rule descends to close the open end of the galley and keep the type from falling to the left; (c) the column pusher moves to the right, pushing the line under the rule, onto the galley, and then moves back to its position of rest at the left. The galley cam is rotated, when necessary, by the galley-cam shaft, driven continuously from the cam shaft and so geared to it that the galley-cam shaft makes one revolution for seven revolutions of the driving pulley. On the upper end of the galley-cam shaft is a ratchet that may be engaged by a pawl on the galley cam, and, when so engaged, the cam and its shaft rotate as one piece. The galley is tripped by releasing this pawl so that it will engage the ratchet; this is done by any perforation made by a justifying key. For double-justified matter (where different size justifying spaces are used in different sections of the same line) the casting machine is adjusted so that the galley will not be tripped until the end of the line, when the perforations made by a justifying key in the lower row and the key above it (both keys struck together) are presented to the caster. The galley may be tripped by hand at any time. Since the driving pulley makes seven revolutions while the galley cam makes one, the casting machine will not automatically deliver to the galley lines requiring less than seven key-strokes for characters and justifications.

**TYPE CARRIER.** That part of the casting machine that carries the type from the mold to the left, so that the type pusher may push the type forward out of the carrier and into the type channel, where the individual characters composing the line are assembled. The type carrier is coupled to the cross block of the type mold and moves this block to the right, so that the mold blade can push the finished type out of the mold into the carrier. As this moves to the left, to deliver the type to the type channel, the cross block moves with it, closing the mold for the next type to be cast.

**TYPE CHANNEL.** That part of the casting machine into which each type as cast is delivered from the type carrier by the type pusher. The individual types composing the line are here assembled until the line is complete, when it is placed on the galley.

**TYPE-LINE.** The distance from the bottom of the serif of the cap H to the side of the type opposite the neck. Since all monotype faces used for casting type in justified lines, regardless of their point-size, line perfectly when cast on the same size body, each point-size has its standard type-line which is always the point-size of the mold, written as a decimal, plus .005"; thus, the type-line for ten-point faces is  $.105" (.10" \text{ plus } .005" = \text{equal } .105")$ . **NOTE:** A few abnormally tall faces are cast on a type line .005" lower.

**TYPE MOLD.** Metal is forced into this from the melting pot, by the pump in casting spaces and quads (high or low) and characters. The matrix seals on top of the opening in the mold, where it is held by the centering pin while the character or space is cast. The opening in which the type is cast is enclosed by the two type blocks, the mold blade that reciprocates between these two blocks, and the cross block which reciprocates against the front faces of the two type blocks. Just before the matrix seals on the mold the lining mechanism pushes the mold blade back so that the distance between its front end and the face of the cross block equals the thickness (set-way) of the character to be cast. After the type is cast, the cross block, which is coupled to the type carrier, is pushed to the right, as the carrier moves to the right into position to receive the type, pushed into it by the forward movement of the mold blade. The movement of the cross block cuts off the jet and throws this back into the melting pot. Type molds are of two kinds, composition and sorts. Composition molds are for casting type in automatically justified lines, with either high or low spaces and quads as desired, and also for casting type and spaces for the case. The sorts make cast type and high and low quads and spaces for the case only, and will not compose type in justified lines. The composition molds have their point-size built into the mold and this cannot be changed; sorts molds are adjustable as to point-size within certain limits. All moving parts of all molds reciprocate, there are no hinged joints to wear loose, and, in order that type may be cast at the highest possible speed, the mold and the top of the machine to which it is clamped are thoroughly water-cooled.

**TYPE PUSHER.** The rod that moves forward and pushes the type out of the type carrier into the type channel, where the individual characters composing a line are assembled ready to be placed on the galley when the carrier delivers the last type for the line.

**TYPE-STORAGE BOXES.** Light but strong metal boxes for the storage of type for use with the non-distribution system. These boxes are made in one length and height but in three widths, so that in arranging them in the type-storage cabinet the sizes are

apportioned according to the frequency of use as well as the body-size of the characters. Each box has on the front a convenient handle and label holder; the back of the box is scoop-shaped for convenience in pouring out the type.

**TYPE-STORAGE CABINET.** The reservoir for the non-distribution system into which type is pumped from the type and rule caster and from which it is drawn as required by the compositor. Each cabinet has a capacity of 450 pounds of type and gives storage for two or for three fonts or for space material according to the arrangement of the type-storage boxes in the cabinet. A cabinet holds sufficient to fill completely nine type-cases. The cabinets may be combined two high by placing one on top of another for storage against a wall, or for storage in the waste space behind a standard type frame three of these cabinets side by side will just fit.

**TYPE TRANSFER WEDGE.** The wedge that supports the normal wedge and which in turn is supported by the fixed abutment in casting characters or spaces, the same width as they are counted by the keyboard. The type transfer wedge moves to the right to permit the normal wedge to be positioned for the next character to be cast, and then back to the left to support the normal wedge. The movement of the type transfer wedge to the left is stopped by the micrometer wedge, an adjustable stop that may be regulated by the micrometer screw to make the set-size of characters the size required. After the type transfer wedge has thus been stopped, at the left end of its stroke, the mold blade is drawn back so that the set-size of the type cast is determined by the position of the normal wedge and the adjustment of the micrometer wedge. **SUMMARY:** The type transfer wedge moves to the left and then back to the right for every revolution of the casting machine unless the perforation made by the space punch is presented to the caster; in this case the type transfer wedge remains at the right and, in its place, the space transfer wedge moves to the left to support the normal wedge. The space transfer wedge is always used in casting sorts; not the type transfer wedge.

**TYPEWRITER FACE.** A face to imitate typewriting and consequently with all characters made for the same width body (set-size). Typewriter faces are designed to match the faces created by the manufacturers of different typewriters, and in some the set-size of the characters is based on the pica and in others on the tenth of an inch. Typewriter faces are made either to print direct from the type or to print through a ribbon. When composing these faces at the keyboard the typewriter attachment must be used to cause the board to register all characters as nine units. Justifying spaces are not used, therefore the keyboard must be adjusted so that the space bars will produce fixed size spaces which, because the typewriter attachment is used, are registered as nine units. In setting typewriter faces the measure must be made an even multiple of the width of the characters for the face being set. No justifying scale is required.

**TYPE & RULE CASTER.** The casting mechanism of the standard monotype plus the lead and rule unit and the display type unit. Supplies all the material required by the hand compositor—type, borders, and high and low space material of any size from five- to thirty-six-point; rules, high and low leads and slugs of any thickness from two to twelve-point. The slugs of any thickness pump this material into the type and rule caster pump; this material into the reservoir the type-storage cabinet, from which it is drawn as required by the compositor. By applying the additional units the type and rule caster can at any time be converted into the standard monotype

for casting type in automatically justified lines.

**UNIT.** One-eighteenth the width of the widest character of the font (the cap M). This unit is used in measuring the width of all the other characters in the font. The actual size of the unit in thousandths of an inch depends upon the set of the face; that is the width, in points, of the widest (18-unit) characters in the font. Thus, one unit of 8-set is one-eighth of eight points, or .0015."

**UNIT-ROW.** The matrices carried in the same comb of the matrix case are said to be in the same unit-row, because all characters on a comb are cast on the same width body (same unit-size), unless this size be increased by adding justification. The unit-rows of the matrix case are therefore the rows that extend from front to back, operating position; thus, as the case moves to the right, or left, it presents a different unit-row to the mold.

**VARYING THE TYPE LANE.** This is done on the casting machine by moving the centering-pin bush (in which the centering pin works) for any change in alignment not exceeding three and one-half points. When greater changes in alignment are required for sorts matrices (14-point and larger), this is accomplished by using a special slide and abutments in the sorts matrix holder.

**WATER-COOLED MOLDS.** Molds used for casting molten metal from the melting furnace into pigs for use again at the casting machine. In order to cast quickly with the two molds, which form a set, these molds are cooled by a circulation of water through them. **NOTE:** All monotype molds for making type, rules, leaders, and slugs on the casting machine are thoroughly water-cooled.

**WIDE MEASURE UNIT.** An attachment applied to the galley mechanism of the casting machine to enable it to remove from the type channel, where the type for a line are assembled, and place upon the galley a line up to and including sixty pica in length, the standard casting machine without this attachment will place on the galley any line not longer than forty-two pica.