

# Composing machine; Machine-compositeur - 2

M. Lagerman

*Vardagstryck Affärstryck 1800-tal 8:o*



National Library  
of Sweden



## DESCRIPTION.

**T**HIS machine consists of a frame supported by two feet. This frame is provided with grooves, in which the type canals are attached. By means of treadles *H* and *H*<sup>1</sup> the fly wheel *G* can be put in a rotary motion. By means of a string gearing the fly wheel actuates the smaller wheel *G*<sup>1</sup> in order to drive the distributing mechanism. A similar wheel, situate lower down but not visible on the drawing, drives the composing mechanism.

*D* is a catching mechanism moveable backwards and forwards with the hand, for distributing the types in the canals of the machine.

*D*<sup>1</sup> is a bar with grooves, in which three finger stalls fixed to the catching mechanism and moveable up and down may, one at a time, be pressed down and thus give a stable and determined position to the mechanism. The distance between these grooves is thrice as great as that between the type canals and the distance between the stalls mutually is so adapted, that when the first stall is pushed down in a groove the type canal of the catching mechanism stops in front of one of the stationary canals of the machine; when the second stall is pressed down in the same groove the canal of the catching mechanism stops in front of another of the stationary canals and when the third stall is pressed down in the same groove the type canal stops in front of still another of the canals of the machine. The same groove serves consequently for three different canals, the letters of which are indicated one beneath the other on the bar *D*<sup>1</sup>. The topmost letter designates the canal, suitable when the stall situate most to the left is pressed down; the middlemost letter suits the middle stall and the undermost letter the stall situate most to the right. Moreover, the grooves are divided into groups of three, in order that the operator may easily and rapidly find the right one. The distance between the finger stalls and the type canals is short, in order that the distributor may conveniently read the line when distributing.

*E* is a catching mechanism similar to the preceeding one with finger stalls for taking the types out of the canals of the machine and composing them to a line. On this mechanism the distance between

the finger stalls and the type canals is great, in order that the compositor may conveniently catch the types in the canals, which are in front of the distributor.

*E*<sup>1</sup> is a bar with grooves of the same nature and for the same purpose as those of *D*<sup>1</sup>.

*B* is the column to be distributed.

*C* is the galley, in which the composed lines are collected to a new column.

*F* is a little letter-case for those types, which occur so rarely, that they do not require being placed in any particular canals. The shank of the pulley *G* is at its end provided with ratchet teeth, between which a pawl can fall in and thus be caused to make a single revolution. This motion acts upon a crank, which pushes the plate *D*<sup>2</sup> downwards; this plate is followed by the canal of the catching mechanism, the lower end of which pushes down the types in one of the stationary canals of the machine; while stopping a moment in this position a hook, fixed to the catching mechanism, is brought sideways, whereby the undermost type will be pushed cross-ways out of the distributing mechanism and into one of the canals of the machine. A little slide with a spring pushes down the types into the line.

The catching mechanism for composing works precisely according to the same idea. In causing a pawl to fall in between the teeth on a constantly revolving shaft, a crank is caused to make a revolution, which motion partly raises the plate *E*<sup>2</sup> with the type canal of the catching mechanism, and partly moves another plate, which pushes a hook, fixed to the type canal, sideways, whereby a type will cross-ways be pushed out of the machine canal and into the line. A little slide with a spring retains the line during this operation.

Small pieces, which by means of the friction adhere slightly to the walls of the canals, support the distributed types in their topmost ends, and small weights press down the types into the lower ones. When there begins to be want of types for composing, the distributed types are pressed down by means of the little weight, whereafter the friction piece is removed, and thus all the types, being in the canal, get together, the friction piece is put in at the top of the canal, and then the distribution may recommence. If the distribution is wanted to be performed without any simultaneous composing taking place, a great quantity of types is by means of a pair of suitable pincers taken out of a canal and placed in the magazine canal, from which they are, by means of the same pincers, replaced in the machine canals while composing.

*K* is a little lever actuated by the rod of the treadles and by means of the pawl *O* driving the wheel *I*, which by means of the

crank lever causes a kind of pincers  $L$  — which retain the composed line while justifying — to go up and down.

$N$  is an arm provided with a roller which by means of a plane on the wheel  $I$  pushes the line out of the pincers  $L$  into the galley  $C$ .

The automatic justifying of the line to a wanted length is effected thus, that the compositor, while composing, inserts two thirds of an m-quadrat at a time between the words and composes the line either to its exact length, if this be possible, or a little too long. The justification is then effected thus, that the line, pinched between the pincers  $L$ , is pushed upwards, while a quoin gliding along the side of the composed line, gets into the interspace between two words. A mechanism, then caused to work, pushes out the topmost third, and thus the length of the line is reduced by a third of an m-quadrat; this operation is continued in the same manner, until the line has obtained nearly its exact length, but then it may occur, that the line would be a little too short, if it were to be diminished by the third of an m-quadrat; in such an event the mechanism substitutes  $\frac{1}{4}$ <sup>th</sup> m-quadrat in the place of the  $\frac{1}{3}$ <sup>rd</sup> pushed out. The line is thus reduced only with the difference between  $\frac{1}{3}$ <sup>rd</sup> and  $\frac{1}{4}$ <sup>th</sup> = say  $\frac{1}{12}$ <sup>th</sup> m-quadrat. When this is effected with the topmost third, the same operation is continued also with the subsequent one. The interspace between the words will then be equal to  $\frac{1}{2}$  m-quadrat. When the line has thus obtained precisely its exact length, its pushing upwards is continued without any further substitution of justifiers, until the line arrives in front of the galley, when it, by moving the arm  $N$ , is pushed therein, when the pincers  $L$  return to their undermost position, where they remain, until a new composed line, is pushed between them. When the column has the width of a common book-page, the third of an m-quadrat can almost always be substituted by a quarter. The variations of the interspaces will then only be equal to the difference between  $\frac{2}{3}$  and  $\frac{1}{2}$  of an m-quadrat, whereby the column obtains a nicer appearance, than if the width of the interspaces were to vary from  $\frac{2}{3}$  to  $\frac{1}{3}$  of an m-quadrat.

The machine is worked in the following manner:

The person, occupied with the distribution, stands to the left of the compositor, who is sitting, and turns the machine by means of the treadles, alternately with the latter, if no machine force is at hand. By means of the pincers  $B^1$  the distributor takes a line out of the column  $B$  and places it in the type canal of the catching mechanism. Then he puts three fingers of the right hand into the stalls, presses quite slightly the right stall in the groove on the bar  $D^1$ , indicating the letter he wants to distribute. The catching mechanism then not

only obtains its requisite position, but the stall presses at the same time against the moveable bar, situate behind the bar  $D^1$ ; the former effects, that the above pawl falls in between the corresponding teeth, whereby the undermost type in the catching mechanism will be distributed.

The composing mechanism is worked quite in the same manner. By pressing down a finger stall in any of the grooves on the bar  $E^1$ , the removing of a type from a stationary canal into the line of the catching mechanism is effected; when this line has obtained its exact length or somewhat more, the catching mechanism is pushed to the right, while the retaining spring throws the line up into the bar  $L$ , which then immediately begins its ascending for justifying the line, and at the same time the compositor commences the composition of a new line.

---

OPINION EXPRESSED BY THE BARON A. E. NORDENSKIÖLD  
 PROFESSOR AT THE ROYAL ACADEMY OF SCIENCES,  
 AND SOME OTHER DISTINGUISHED PERSONS  
 ON  
 THE LAGERMAN COMPOSING MACHINE

THE undersigned having been present at the trial of a composing-machine, invented by the Engineer ALEX. LAGERMAN, desire hereby to express our admiration of the ingenious invention and, at the same time, state that we consider the said composing machine to have solved the problem for which it was intended, namely, composition, justification of the composed type into even lines, and distribution. In other respects we acquiesce in the testimonials given by professionalists and technical men.

Stockholm, December 20<sup>th</sup>, 1884.

A. E. NORDENSKIÖLD,  
 BARON, PROFESSOR.

HANS HILDEBRAND,  
 RIKSANTIQUARIE.  
 (ANTIQUARY OF THE REALM.)

HUGO GYLDÉN,  
 PROFESSOR OF ASTRONOMY.

W. HOLMSTRÖM,  
 MANUFACTURER.

RUDOLF WALL,  
 EDITOR OF THE »DAGENS NYHETER».  
 (THE DAILY NEWS.)

---

OPINION EXPRESSED BY SEVEN OF THE PRINCIPAL  
OVERSEERS OF STOCKHOLM ON THE LAGERMAN  
COMPOSING MACHINE.

AT the trials undertaken in the presence of the undersigned with the above machine, partly on the 18<sup>th</sup> and partly on the 25<sup>th</sup> October, we have ascertained, that the machine worked by one compositor and one assistant for the distribution has been able to compose, justify, and distribute 4200 to 4500 types an hour.

In our opinion and to our knowledge the Lagerman composing machine is superior to all other inventions in this line made up to the present time, for the following reasons:

*That* the types are always exposed to the eye, whereby, if any error should occur in the distribution, such an error may be easily detected and corrected;

*That* the mechanism, at the composition and the distribution, does not get into contact with the engraving of the type, and that the seizure of the type takes place in such a manner that any wear of the body of the type worthy of mentioning can hardly occur;

*That* the machine justifies the composed line to any required width, from the narrow news-paper column to the common book-page, which quality we consider as its most important and noteworthy one;

*That* the machine can be employed by a single person separately as well as by two persons conjointly. When employed by a single person the distribution takes place at one time and the composition at another, as usual;

*That* with the machine, when worked by two persons, the composition and the distribution can be performed simultaneously, whereby the greatest effect together with the greatest economy is secured, as the person requisite for the distribution does not require to be possessed of the skill of a compositor, but only to know the position of the canals and how to read the types, whereby the wages of the distributor may be reduced by a half, compared with those of the compositor.

If the work performed by the machine with one compositor and one assistant for the distribution be calculated at 4200 types an hour, say 42,000 types in 10 hours, this would, according to the rate of payment calculated at this place, represent crowns 13.50 for composition by hand. If the wages of the workmen at the machine be calculated to cr. 7.50, say cr. 5 to the compositor and cr. 2.50 to the distributor, there would be an economy of cr. 6 a day, say cr. 1.800 a year, of which however interest and sinking are to be deducted. With regard to the news-paper composing, which generally is paid better, the result will prove still more advantageous.

As, besides, the manipulations with the machine are very easily learned and the machine can perform as much work as 3 compositors, we not only consider it quite practical and economic of work, but we are persuaded that it will meet with a merited acknowledgement and a great spreading.

Stockholm, Oct. 25<sup>th</sup>, 1884.

J. G. NORDIN,

OVERSEER AT THE ROYAL PRINTING OFFICE.

CARL O. LUNDIN,

OVERSEER AT THE STOCKHOLMS DAGBLAD.

CARL FR. BERNSTRÖM,

OVERSEER WITH K. L. BECKMAN.

CARL LINDROTH,

OVERSEER AT THE CENTRAL PRINTING OFFICE.

E. A. HAGLUND,

OVERSEER AT THE DAGENS NYHETER.

A. LÖFGREN,

OVERSEER AT IVAR HÄGGSTRÖM'S PRINTING OFFICE.

C. F. LIPPMAN,

OVERSEER AT THE CENTRAL PRINTING OFFICE.

OPINION OF MR **CARL O. LUNDIN**,  
OVERSEER AT THE STOCKHOLMS DAGBLAD  
ON  
THE LAGERMAN COMPOSING MACHINE.

**T**HIS is to certify on request:

*that* the composing machine, invented by MR ALEX. LAGERMAN, has under my superintendence been working during a long time in the composing room of the »Stockholms Dagblad» with the view of ascertaining its capacity and advantages;

*that* two mechanic apprentices having acquired some ability of working the machine were able to distribute, to compose and to justify 1000 news-paper pages — say about 42,000 types — a day;

*that* two lads, having commenced to exercise themselves in order to acquire some skill in working the machines ordered for the account of the »Stockholms Dagblad», very easily learned the requisite manipulations and after ten day's exercise the lad engaged at the composition was able to work with the machine as rapid as by hand;

*that* according to my experience as to the convenience of the machine for its purpose, I consider it quite practical.

Compared with the simple letter-case the machine requires of course by far a greater watchfulness and care, at least in the beginning, when the training is going on; but this is something which in my opinion will not in the least impede the success and the use of the machine, as every person of the trade, having an eye for the exigencies of the time, ought to be anxious of trying to obtain the greatest possible economy of labour and rapidity — results which in my opinion are to be gained by the Lagerman composing machine, at least for the so called plain book and newspaper composition.

I refer besides to the testimonial I conjointly with six other overseers have imparted on the 24 October of this current year.

Stockholm, Dec. 15<sup>th</sup> 1884.

**CARL O. LUNDIN**,  
OVERSEER AT THE STOCKHOLMS DAGBLAD.

OPINION EXPRESSED BY MR **HEDLUND**, HEAD  
ENGINEER, AND MR **THAM**, MANAGING DIRECTOR  
OF THE HUSQVARNA RIFLE AND SEWING  
MACHINE MANUFACTORY  
ON  
THE LAGERMAN COMPOSING MACHINE.

**T**HE undersigned, having been desired to examine the mechanic properties of the machine, invented by Mr ALEX. LAGERMAN, for distributing, composing and justifying printing characters, has hereby the pleasure of imparting the following opinion:

The fundamental body of the machine is of a solid construction and composed in such a manner, that no prejudicial vibrations will occur.

The iron plate canals containing the types are simple, cheap and connected with the body in the best and most direct way.

These canals have no moveable mechanism of any kind whatever, no connecting rods, balances, flap-valves, springs or such like, but everything is of the most simple and solid construction.

The driving of the machine requires but little force by means of treadles and a single string gearing.

The catching mechanism to be managed by hand for distributing the types into the stationary canals of the machine has a minimum of moveable parts and its operation is the most simple imaginable for such a complicated performance.

The composing mechanism, also moveable, is likewise most simple and working in the same manner as the preceding one but in an opposite direction in order to take the types out of the stationary canals of the machine.

The mechanism, by which the motion of the treadle wheel is transferred to the catching mechanism, is likewise very solid and simple, and the mode on which it is possible to cause this mechanism, by a very slight pressure of the fingers, when composing, to operate with the rapidity of lightning a single revolution and then stop, is very ingenious; this mechanism can work with a wonderful speed; a line of 100 types of the same kind may be composed in the sixth part of

a minute and the distribution can be performed with equal speed. However, I will here make the remark, that this mechanism is somewhat noisy, an inconvenience which, owing to my long practical experience in the sewing machine manufacturing etc., I am convinced may be considerably reduced if not removed altogether.

As the interspace between the canals must be small, in order that the machine may not be too wide, it would be impossible for the compositor to find with requisite rapidity the position of the wanted canal, unless the interspaces between the grooves, constituting rest places for the catching mechanism, were thrice as great as those of the canals. The mode on which each of these grooves may serve for three different canals is really most simple and ingenious, and is so well adapted to the motions of the fingers, that any better mode may hardly be imagined.

The mechanism for justifying the lines is comparatively more complicated, but as it does not need, by far, to work so rapidly as the distributing and the composing mechanism, it is practically of no moment, if there are some moveable parts more or less, provided that they work so, that they are not exposed to any particularly great wear. And considering the problem, probably most difficult of solution, of effecting an automatic and exact justification of the lines to any wanted length, it must be owned, that the mechanism is by no means excessively complicated, and as it moreover performs its work with wonderful precision, I am really of opinion that the machine in its entirety may, owing to this mechanism, be placed in the first line of the most ingenious and excellent machines ever invented for the purpose of rendering man able to perform the most possible work in the shortest possible time.

Husqvarna, Dec. 12<sup>th</sup>, 1884.

C. E. HEDLUND.

HEAD ENGINEER AT THE HUSQVARNA  
RIFLE AND SEWING MACHINE MANUFACTORY.

After having this day examined the above very ingenious machine and seen it work, I have the pleasure to join in the testimonial imparted by MR. HEDLUND on this behalf.

Husqvarna, Dec. 12<sup>th</sup>, 1884.

WILHELM THAM,  
MANAGING DIRECTOR.

---