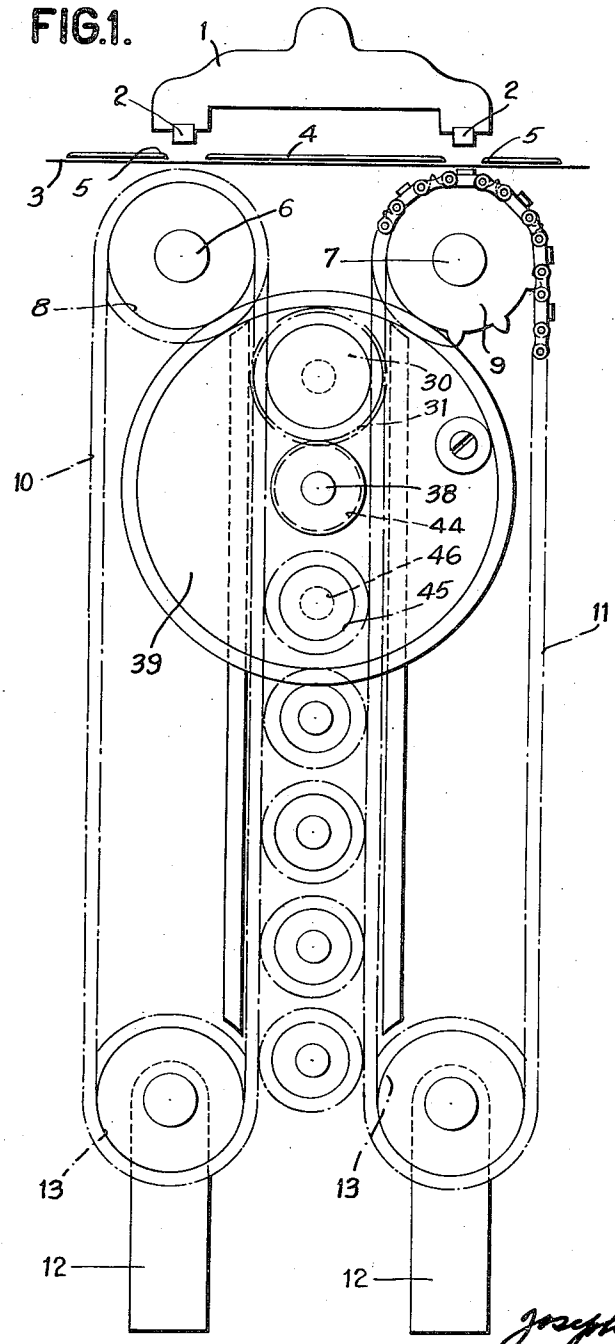
Dec. 7, 1937. J. W. MILES 2,101,444

TICKET PRINTING MACHINE

Filed July 25, 1934 2 Sheets-Sheet 1

FIG.1.



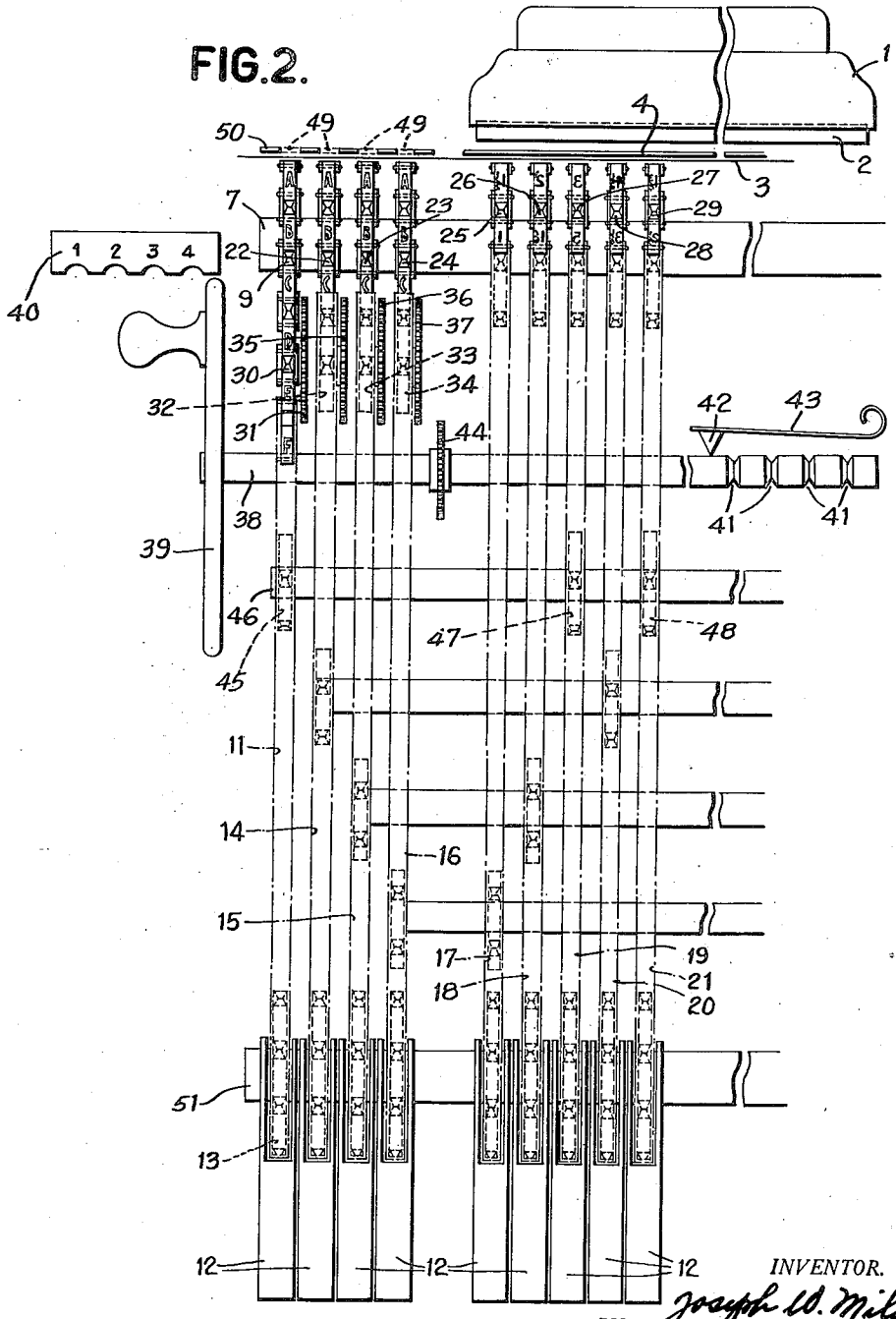
INVENTOR.
Joseph W. Miles
BY
ATTORNEYS.

Dec. 7, 1937. J. W. MILES 2,101,444

TICKET PRINTING MACHINE

Filed July 25, 1934 2 Sheets-Sheet 2

FIG.2.



INVENTOR.

BY Joseph W. Miles

ATTORNEYS.

Patented Dec. 7, 1937

2,101,444

UNITED STATES PATENT OFFICE

2,101,444

TICKET PRINTING MACHINE

Joseph William Miles, London, England, assignor to International Business Machines Corporation, New York, N. Y., a corporation of New York

Application July 25, 1934, Serial No. 736,809
In Great Britain August 4, 1933

2 Claims. (Cl. 101—111)

The present invention relates to machines for printing tickets, coupons or the like and has special reference to machines for printing coupon tickets for the purpose of keeping a record of workmen's wages and like data.

Coupon ticket printing machines are known in which the desired data are printed upon the coupons by type carried in slidable type bars connected through gearing and other operating means with adjusting handles so as to enable the printing of variable series of symbols such as numbers, letters, price denominations and the like. Such a known machine in which a number of symbols are simultaneously printed on a number of coupons all forming part of one main ticket and provided with perforations to enable the coupons to be readily detached is described and illustrated in the specification and drawings of Patent No. 1,371,893, issued March 15, 1921. It has been found, however, that such machines whilst otherwise efficient do not satisfy the requirements now felt for a machine in which a very large number of symbols or series of symbols can be efficiently printed. In the known machines it has been usual to provide an indicator corresponding with the type carrying bars and moving in conjunction therewith and adapted to provide an indication or designation of the type which has by a given movement of one or more controlling handles been brought into printing position.

It is found in practice that the number or range of type that can be accommodated in the type carrying bars is limited due to the fact that these bars cannot exceed a given length without making the machine cumbersome.

It is therefore the object of the present invention to provide a ticket or like printing machine in which a very much larger number of type can be accommodated than with the known machines already referred to. In accordance therefore with the present invention considered broadly, a ticket or like printing machine comprises a series of chains, bands or belts carrying type and movable selectively into a number of indicated positions to enable the printing from the type of a variable series of symbols.

More particularly in accordance with the invention a ticket or like printing machine comprises a series of chains, bands, or belts carrying type, a series of chains, bands, or belts carrying indications visible to an operator, and means whereby said visible indications may be selectively changed, said changes being communicated to the type-carrying chains so that a variable series of symbols can be printed from the type. It will, of course, be understood that the type must be rigidly held in the chain, band, or belt accommodating them but that they must also be readily detachable at will as is the case with the type carried in the type-carrying bars of the known machine.

In order that the present invention may be more fully understood, there will now be described, by way of example, a ticket or like printing machine in accordance therewith and the manner of operation thereof with reference to the accompanying drawings, in which Figure 1 represents a diagrammatic end elevation of a ticket printing machine in accordance with the invention and Figure 2 is a diagrammatic side elevation of the machine shown in Figure 1.

Referring to Figure 1 of the drawings, 1 indicates an impression member for securing a printed record upon a card, not shown, which is inserted between rubber pads 2 and an ink ribbon 3 for the purpose of securing an impression from type carried by chains as hereinafter described. A cover plate 4 is situated above the ink ribbon 3, said plate being, however, cut away as indicated at 5 to permit the pads 2 to press against the card. Mounted on shafts 6, 7 beneath the ink ribbon 5 is a series of sprocket wheels 8, 9, carrying endless chains 10, 11, each chain being kept taut by a weight 13 so that the chains 10, 11 hang vertically. The chains used in the machine are divided into two classes. In one class each half-link of a chain is adapted to carry an indicating letter or symbol and chains of this class are hereinafter referred to as "indication-bearing chains". In chains of the other class, each half-link carries a printing type and chains of this class are referred to as "type-carrying chains". Figure 2 shows the manner in which the chains are divided into these two classes, chains 11, 14, 15 and 16 being indication-bearing chains and those numbered 17, 18, 19, 20 and 21 being type-carrying chains.

Referring now more particularly to Figure 2, it will be seen that the two series of sprocket wheels of the two sets 9, 22, 23, 24 and 25, 26, 27, 28, 29, are mounted for free rotation upon a common shaft 7, similar sets being arranged behind these upon the spindle 6 shown in Figure 1.

Meshing with chains 10, 11 is a sprocket wheel 30 carrying a gear wheel 31 external to the chains 10, 11. Similar sprockets 32, 33, 34 carrying similar gear wheels 35, 36, 37, mesh with chains 14, 15, 16. As shown in Figure 2 each of chains 11, 14, 15,

16 carries indications or symbols which may, as shown, take the form of letters.

Mounted in the framework of the machine is an axially slidable shaft 38 capable of being rotated by means of handwheel 39 and also of being adjusted to various longitudinal positions in which the handwheel 39 will occupy one or other of the positions shown in an indicator 40 attached to the frame of the machine and in which notches 41 in the shaft 38 will be engaged by a V-shaped detent 42 urged into engagement therewith by a spring 43. Fixed on shaft 38 is a toothed gear wheel 44, such that when shaft 38 is moved longitudinally into one or other of the four positions shown by indicator 40, gear wheel 44 will mesh with one or other of gear wheels 31, 35, 36, 37 and, upon rotation of shaft 38, cause the corresponding co-operating gear wheel to rotate, with corresponding movement of the chain connected thereto.

Mechanical connection is provided between the various individual chains of the series of indication-bearing chains and various chains or groups of chains of the series of type-bearing chains. As shown this mechanical connection is provided by a series of sprocket wheels fixed on shafts by which movement of an indication-bearing chain causes corresponding movement of one or more type-bearing chains. For example, a sprocket wheel 45 mounted on a shaft 46 meshes with chain 11 of the indication-bearing chain, this shaft 46 carrying two further sprocket wheels 47, 48, meshing respectively with chains 19 and 21 of the type-carrying series. It is to be observed that the type-carrying series of chains has not been shown completely but it will normally comprise a very large number of chains.

As each indication-bearing chain is turned by means of handwheel 39, shaft 38, and gear 44, into a position in which a certain symbol becomes visible to an operator through an aperture 49 in a cover-plate 50, one or more of the type-carrying chains is simultaneously brought into a position in which a corresponding type or types are brought into printing position beneath ink ribbon 3 and rubber pads 2 so that when the impression member 1 is depressed by a suitable lever, not shown, a card placed between said member and the ink ribbon will have impressed thereon the figures or other symbols carried by the type then in position.

If desired, means such as one or more V-shaped detents, not shown, may be provided to engage the teeth of any of the sprocket wheels for the purpose of securing alignment of adjacent type in a series of chains and so thus obtain a properly aligned impression.

If desired the type-carrying chains may pass over a bed or platform made of any desired material for the purpose of supporting the chains and the type which they carry against the pressure of the impression member 1 which, during the operation, is caused to press a card to be printed upon against the type face. Means are desirably provided also to ensure that shaft 38 may only be moved endwise when the teeth on the respective gear wheels to be meshed are in a proper position therefor. Said teeth may be specially bevelled or otherwise suitably cut to assist the meshing operation.

If desired the weights 12 shown in Figure 2 of the drawings may be carried by a shaft 51 common to all the tension sprocket wheels 13 etc., of each series of chains. Instead of weights it will, of course, be appreciated that tension springs may be utilized for producing the requisite tension on the various chains of each series.

It will be understood that the chains, bands, or belts, may be made of any desired length and may be provided in any desired number; in consequence a large number and range of type can be accommodated thereby providing a greatly increased range of usefulness of the apparatus as compared with known machines.

While I have shown and described and pointed out the fundamental novel features of the invention as applied to a single modification, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. I intend to be limited therefore only as indicated by the scope of the following claims.

What is claimed is:

1. A coupon ticket printing machine comprising a plurality of looped indicator bands, each indicator band having a series of visible indications thereon settable to a reading line, a plurality of groups of type carrying bands, each type carrying band of a group carrying type corresponding to the indications of a related indicator band, means for selectively operating an indicator band, means for communicating the movement of said indicator band to one type carrying band of a related group to bring the type thereof in a printing line corresponding to the reading line of the indications on the indicator band, and means for communicating the movement of the selected indicator band to the other type carrying band of the group to present the type thereof to another printing line.

2. A coupon ticket printing machine including a plurality of looped indicator bands, each indicator band having a series of visible indications thereon settable to a reading position, a plurality of groups of looped type carrying bands, each group correlated with a related indicator band and each band of the group carrying type characters corresponding to the indications on the related indicator band, means for selectively operating a selected indicator band, a pinion driven by a related indicator band and a shaft carrying said pinion, and means comprising a plurality of pinions carried by said shaft for driving the related group of type carrying bands for communicating corresponding movement of the group of type carrying bands by the related indicator band.

JOSEPH WILLIAM MILES.