May 24, 1927. 1,629,944

S. S. ADAMS

METHOD OF MANUFACTURING AUTOMOBILE LICENSE PLATES

Filed Nov. 21, 1924 2 Sheets-Sheet 1

Fig. 1

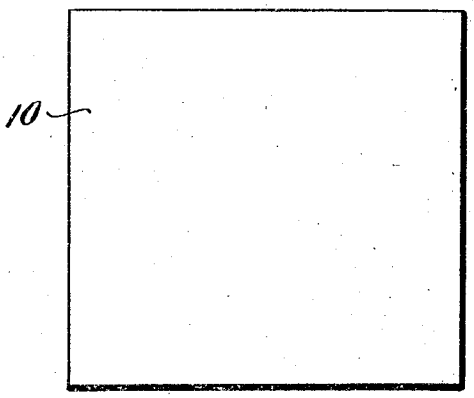


Fig. 2

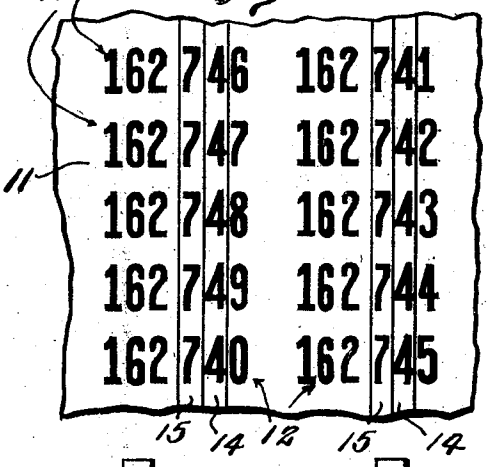


Fig. 5

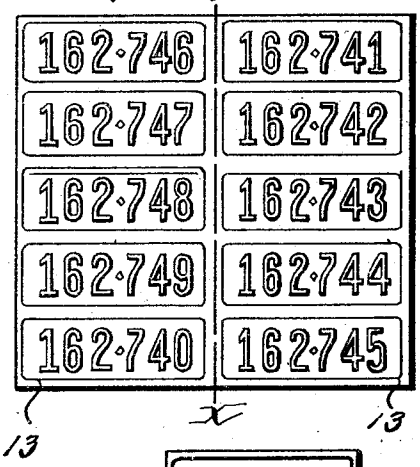


Fig. 3



Fig. 4



Fig. 6

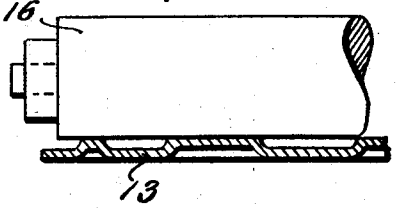


Fig. 7

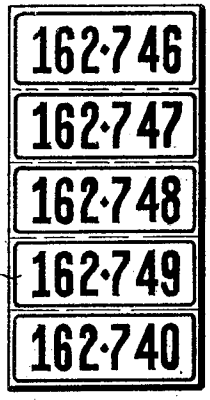
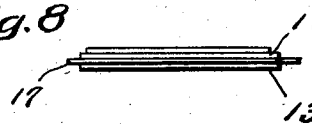


Fig. 8



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METHOD OF MANUFACTURING AUTOMOBILE LICENSE PLATES

Filed Nov. 21, 1924 2 Sheets-Sheet 2

Fig. 9

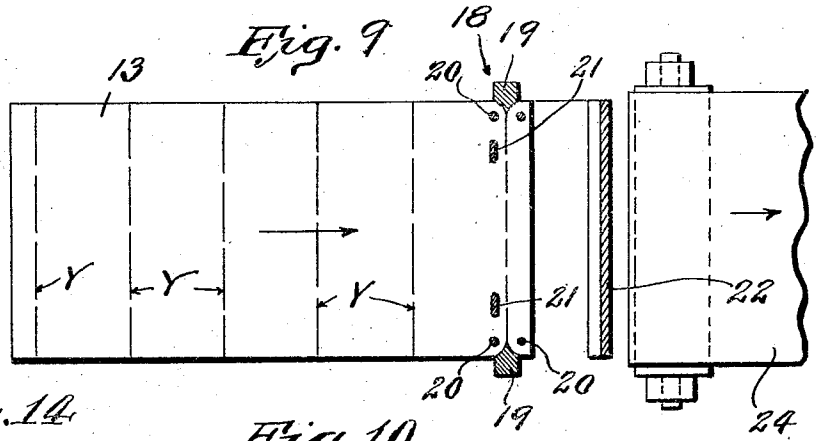


Fig. 14

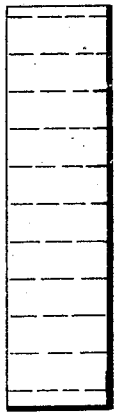


Fig. 10

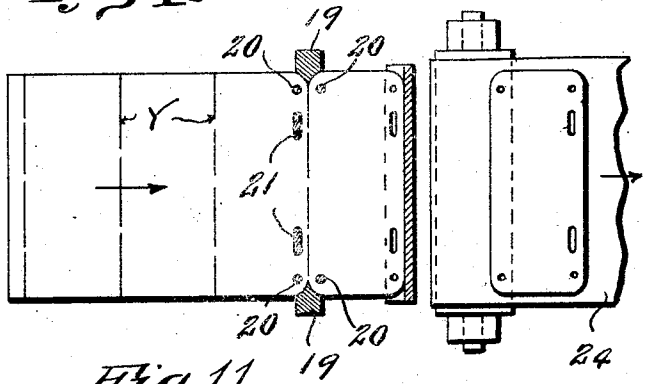


Fig. 11

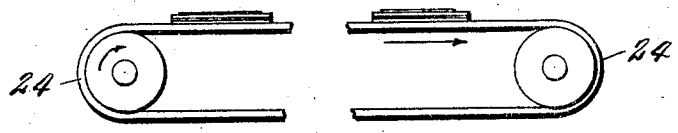
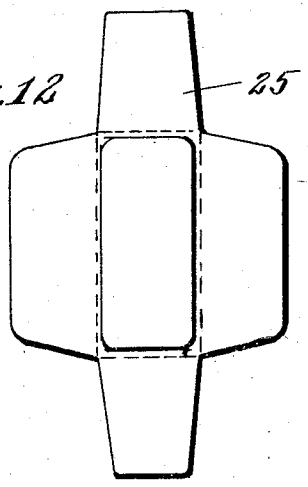


Fig. 12



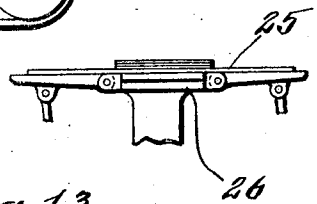
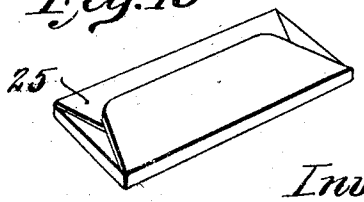


Fig. 13



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Patented May 24, 1927. 1,629,944

UNITED STATES PATENT OFFICE.

STEPHEN S. ADAMS, OF ST. LOUIS, MISSOURI.

METHOD OF MANUFACTURING AUTOMOBILE LICENSE PLATES.

Application filed November 21, 1924. Serial No. 751,384.

This invention relates to a new and useful method of producing vehicle license plates and other plates serially numbered or marked, and the objects of the invention are to produce plates of the class described in an efficient and economical manner, thereby facilitating the production thereof and reducing the manufacturing costs of such plates.

Further objects of the invention are to provide a method of manufacturing embossed plates, containing numbers of progressively increasing or decreasing denominations, said plates being arranged in a series of predetermined groups and each group being in proper numerical order with the adjoining groups, whereby the finished plates can be arranged in numerical rotation.

Still further objects of the invention are to coordinate the various steps of manufacture of the plates whereby the embossing or printing, or both, of each series of groups or plates is done simultaneously on all of the groups and each group or plate is then severed and perforated and placed in a proper envelop in a predetermined order, thereby eliminating unnecessary labor and operations and increasing the production thereof.

With these and other objects in view, my invention consists in certain novel features of construction and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a sheet of material from which the plates are made.

Figure 2 is a top plan view of the die used in embossing the plates.

Figure 3 is a plan view of one of the removable type bars used in the hundreds column.

Figure 4 is a plan view of one of the removable type bars used in the tens column.

Figure 5 is a plan view of the sheet with the numbers embossed thereon.

Figure 6 is a cross sectional detail view of the sheet and showing the manner in which the embossed characters are coated with color.

Figure 7 is a top plan view of one section of the sheet and showing the embossed characters coated with another color.

Figure 8 is an end elevational view of two strips containing like numbers, said strips being arranged in superimposed relation in readiness for the severing operation.

Figure 9 is a top plan view of the superimposed strips and showing in cross section the devices for perforating and severing the strips transversely into the respective plates.

Figure 10 is a similar view showing said strips in advanced position.

Figure 11 is a fragmental detail view of the belt conveyor and the envelope support.

Figure 12 is a top plan view of the envelope blank with a corresponding pair of plates positioned thereon.

Figure 13 is a perspective detail view of an envelop folded over a pair of plates.

Figure 14 is a top plan view of a modified form of a sheet of material from which the plates are to be made.

Heretofore in manufacturing automobile license plates and the like, the practice was to cut and perforate each plate separately, then enamel or coat it the desired color, after which such plate was placed in a die to be embossed, and the embossed characters then coated with another color or the plate was embossed first and then coated with the color forming the background after which the embossed portions were coated with another color. This method required a great deal of machinery and labor since each operation was performed separately on each plate and a great deal of time was lost in handling and moving the plates.

In my present invention, I propose to make sheets of material of suitable dimensions to accommodate a plurality of groups, each group representing a license plate, such groups being arranged in rows of multiples of five and preferably comprising ten groups arranged in two parallel rows. Each sheet is enameled with an appropriate color which is to form the background and such sheet is then placed in a press containing dies for embossing or printing ten plates in one operation, said plates being arranged in numerical relation with each other. These dies are so arranged that the type bars containing the tens and hundreds columns are removable so that the numerical order of said dies can be progressively increased as the embossing operations progress. The tens column is changed after each second operation, the denomination progressively increasing from zero to nine, after which the hundreds column is changed to the next higher order

and the tens column start again with the zero denomination. As two plates containing like numbers are generally required for each automobile, it is necessary to make two sheets containing like numbers. After the sheet has been embossed or printed with the proper numbers and characters, said sheet is placed in a press wherein the embossed portions are coated wtih another color in order to distinguish the embossed numbers and characters from the background.

After this operation, the sides of the strips or sheets are trimmed and the two strips containing like numbers are arranged in superimposed relation with the corresponding numbers or groups in nested relation and a sheet of tissue paper or waxed paper is interposed between such strips to protect the face of the lower strip. The two strips thus arranged are now fed to a progressive punch press which first cuts the corners and perforates one side of each pair of plates and which in the next operation severs each pair of superimposed plates from the strips and drops said severed plates on a conveyor which delivers the same on to an envelop blank which is then folded and sealed.

Referring by numerals to the accompanying drawings, 10 indicates a sheet of metal enameled in the appropriate color which is to form the background for the plate. This sheet is of a size adapted to form a series of definitely numbered or marked plates. In the present instance, a series of ten plates is to be formed from each sheet, said plates being arranged in two parallel rows each containing five plates or groups. The sheet properly enameled is placed in a press containing a die 11 which consists of a series of numbers arranged in ten groups as indicated at 12. These numbers are arranged in numerical rotation and, in the instance illustrated, the first number is 162741, the next one being 162742 and so on down to the ninth number which is 172749, while the tenth or last number is 162740.

In producing automobile license plates, it will be understood that where two plates with identical numbers are required for each vehicle, two impressions are taken from each die. After the second impression, the bar 14 containing the tens column is withdrawn and another bar containing the next higher denomination is inserted in position. Thus, in the case illustrated, two impressions are taken of the die, thereby producing duplicate license plates ranging from 162740 to 162749. The 4 tens bars are now removed and tens bars carrying numeral 5 are now placed in position and duplicate plates bearing numbers from 162750 to 162759 are now printed. This operation is continued, the tens bars being replaced after every second operation with bars of successively increasing denominations.

When plates bearing numbers 162790 to 162799 have been printed, the hundreds bars 15 which are removably positioned in the die are removed and are replaced by hundreds bars carrying numerals 8 and the tens bars carrying numerals 9 are replaced by bars carrying zeros so that the numbers set up in the die now range from 162800 to 162809. In this manner, plates bearing numbers from 162000 to 162999 can be printed by simply changing the tens and hundreds type bars of the die. As the numbers in the units row do not vary, these occupy fixed positions in the die. The types of the thousands rows and other higher denominations are not made removable in the present instance as it is found more convenient to provide different dies therefor. However, if desired, any or all of the rows of the various denominations can be made removable.

After the plates have been printed or embossed, each sheet of ten plates is placed in a press having an inking roller 16 which passes over and coats the embossed portions with ink of appropriate color. Each sheet is now cut along lines x as indicated in Figure 5 into two strips or halves and the strips or halves of the duplicate sheets are placed together in a superimposed relation with a sheet of tissue or waxed paper 17 interposed therebetween to separate the surfaces of the strips. These strips 13 are now fed to a progressive punch press 18 having punches 19 for centering and rounding the corners of the plates, pins 20 for perforating the plates, and punches 21 for forming slots in one side of each plate.

In the next operation, each pair of plates is cut by shears 22 on lines y transversely of the strips and the severed pair of plates is then dropped on an endless conveyor 24 which carries the plates away from the punch press and delivers each pair of plates on to an envelope blank 25, which blank is then operated by suitable mechanism 26 to fold the envelope over each pair of plates.

Where only one plate is required for vehicles, only one impression is made of the die. While the plates as illustrated and described consist of numbers and letters, if desired, plates consisting wholly of letters arranged in alphabetical relation, or plates containing other characters or marks, can be manufactured according to my method.

While I have disclosed the preferred form of my invention, it is obvious that various changes can be made in my improved method without departing from the spirit of my invention.

I claim:

1. An improved method of manufacturing automobile license plates consisting in forming a sheet of enameled metal, embossing thereon at one operation a complete series of groups of numbers or characters, each group

representing a single plate, said groups being arranged in predetermined numerical relation with each other, coating all of the embossed numerals or characters in one operation with an appropriate color, severing said sheet transversely into plates corresponding to said groups and perforating during said severing operation the contiguous sides of the plates operated upon.

2. An improved method of manufacturing automobile license plates consisting in forming a pair of enameled sheets, embossing on each sheet an identical series of groups of numbers or characters, each group corresponding to one plate, coating the embossed portions with another color, arranging the sheets in superimposed relation with the like groups in nested relation, severing the superimposed strips transversely into plates containing like numbers or characters, and delivering each pair of severed plates on to an envelope blank.

3. An improved method of manufacturing embossed plates consisting in embossing on a sheet of material a plurality of groups of characters, said groups being arranged in multiples of five and each group corresponding to a plate, coating the embossed characters of each sheet with a color, cutting said sheet into plates, and depositing each separate plate on an envelop blank.

4. An improved method of manufacturing vehicle license plates consisting in impressing two sheets of material with identical series of numbers, said numbers being arranged in groups, each group corresponding to a license blank, the groups of each sheet being arranged in numerical rotation with each other and being identical with the corresponding groups of the other sheet, arranging each pair of sheets in superimposed relation with the identical groups of the sheets aligned with each other, interposing between said sheets of material a sheet of paper for spacing the first-mentioned sheets from each other, and severing said sheets simultaneously into respective plates with the corresponding plates in nested relation.

In testimony whereof I hereunto affix my signature this 17th day of November, 1924.

STEPHEN S. ADAMS.