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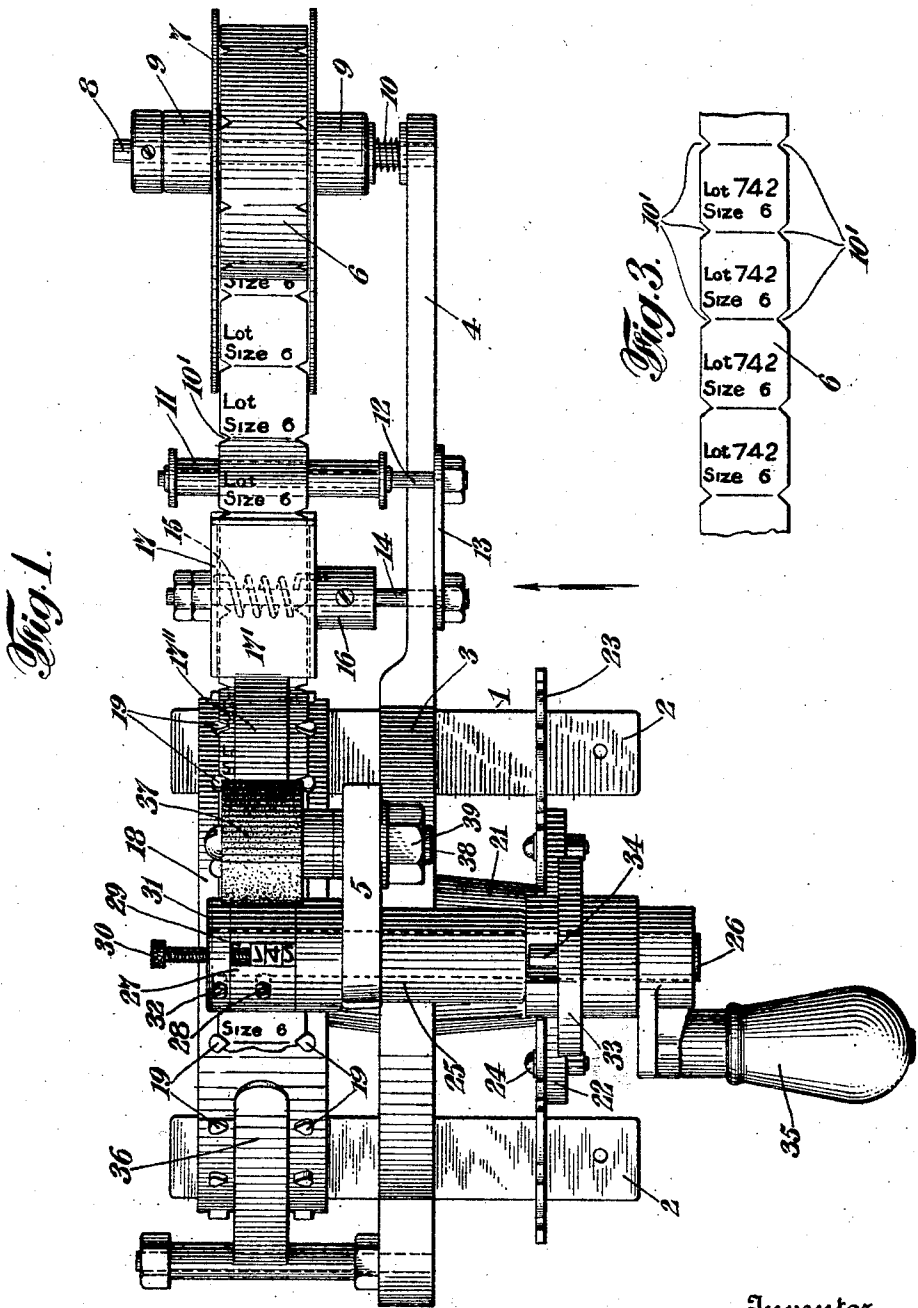
E. F. BUSINGER

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MACHINE FOR PRINTING ON LABEL TAPE

Filed July 12, 1922

2 Sheets-Sheet 1



Inventor
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By his Attorneys
Ward Crosby Smith

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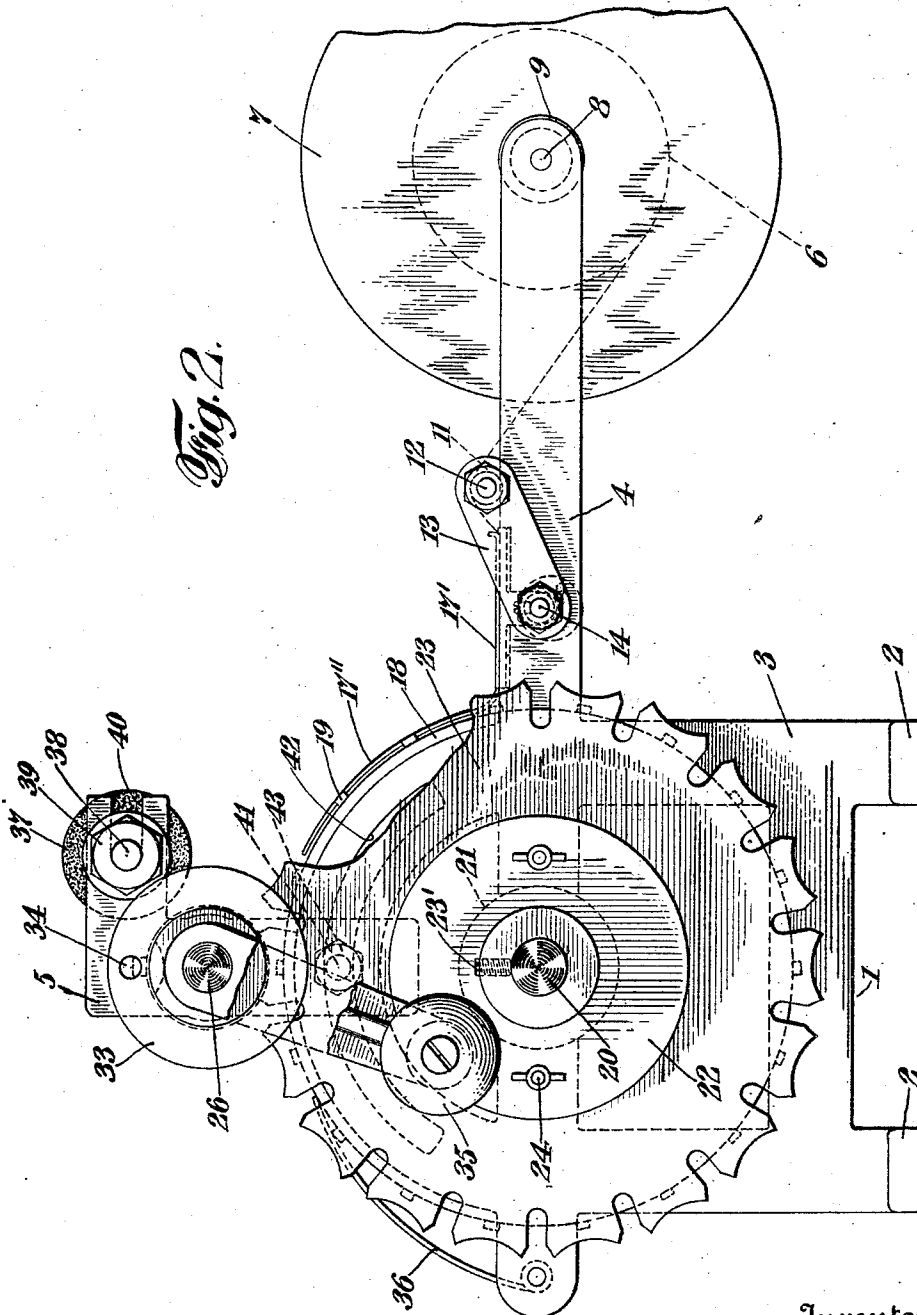
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UNITED STATES PATENT OFFICE.

EMIL F. BUSINGER, OF NEW YORK, N. Y., ASSIGNOR TO G. REIS & BRO., INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

MACHINE FOR PRINTING ON LABEL TAPE.

Application filed July 12, 1922. Serial No. 574,382.

To all whom it may concern:

Be it known that I, EMIL F. BUSINGER, a citizen of the United States, and resident of the city of New York, in the county and State of New York, have invented certain new and useful Improvements in Machines for Printing on Label Tape, of which the following is a specification.

The invention relates to machines for printing on label tape.

Heretofore, machines for this purpose have been devised where a feed wheel is provided for feeding the tape of individual labels, with a suitable printing head carrying a plurality of sets of type and co-operating with the feed wheel to print from the type onto the labels, the feed wheel and the printing head being geared together with ordinary spur gears in such manner that the feed wheel and printing head are continuously rotated and the tape continuously fed through the machine as the members rotate.

Machines of this kind may be satisfactory for certain classes of work where relatively large labels are used, where close accuracy is not required, and where the machines are operated by skilled mechanics or in a place where skilled mechanics are always readily available to properly readjust such machines when they get out of order, and to inspect them frequently to detect improper adjustments before their inaccuracy in printing on the tape develops to such an extent as to spoil the work. But there is a large field of use for these machines in places where they are operated by girls not at all familiar with such machines, or by unskilled labor, and where no mechanic is readily available, either to properly adjust the co-operating elements of the machine in the first instance to insure the proper registration of the type with the individual labels so as to have the printing accurately aligned with the labels, or to observe the operation of the machines to see that this adjustment is maintained, and to readjust the machines in the event that they get out of adjustment or when different kinds of labels are run through a machine, which necessitates readjustments.

With these machines, where the tape-feeding wheel is continuously rotated with the printing head, either due to improper meshing of the gears when the machine is new, or to gradual wear of the gears, there

is a certain amount of lost motion between these two members. This back lash or improper gearing will cause improper registration and smearing the print on the tape, and furthermore due to the fact that the gears used are of the ordinary pinion type, it is difficult for an unskilled operator to understand how to adjust the parts so as to insure proper registration of the type with the tape.

It is the object of this invention to overcome these difficulties by providing a simple, inexpensive machine which can be readily understood by the unskilled operator and which is so simple in adjustment that the proper adjustment can be made at any time by the unskilled operator, and further, to eliminate the chances of improper printing due to back lash, etc. I provide a suitable intermittent movement such for example as a Geneva star wheel and pin for driving the tape step by step and with a co-operating printing head carrying a single set of type which will print upon the labels once for each step by step movement of the tape. Machines built according to this invention, for the reasons stated, have been found to be very reliable and satisfactory in operation.

The invention consists in the novel features, arrangement and combination of parts hereinafter described according to the preferred embodiment of the invention, and the invention will be more particularly pointed out in the appended claims.

Further objects and advantages of the invention will more fully appear from the following description taken in connection with the accompanying drawings illustrating by way of example the present preferred embodiment of the invention.

Referring to the drawings—

Fig. 1 is a top plan view of a hand-operated machine embodying the invention;

Fig. 2 is a side elevation of the same looking in the direction of the arrow on Fig. 1; and

Fig. 3 illustrates a length of tape adapted to be used in the machine.

Referring to the drawings, 1 is a frame comprising flanged feet 2 for securing the machine on a table or bench, an upright frame member 3, a horizontal extension 4, and an upper bracket 5.

The roll of tape 6 is carried on a reel 7

suitably mounted on shaft 8 in any desired manner, as for example by having washers 9-9 frictionally pressing upon the reel by reason of spring 10, to slightly retard the rotation of the reel as the tape is pulled upon by the feeding means. In the present instance the tape is shown as consisting of a series of labels notched on the sides, as at 10', for feeding purposes, and intended to have the lot number printed thereon by the printing type. The tape may pass over a suitable roller 11 the spindle 12 of which is secured at one end to an arm 13 firmly secured at the other end to a shaft 14 which has the following means for yieldingly pressing the roller against the tape. This means consists of a coiled spring 15 having one end engaged in a collar 16 secured to shaft 14 and the other end secured to the side 17 of a friction guide clamp 17' which is swiveled on said shaft 14 as shown in Fig. 2, and the upper member of which carries a finger 17'' adapted to press upon the tape to hold it down on a feed wheel 18. This spring 15 acts to press the finger down upon the wheel, and tends to hold the roller 11 against the under surface of the tape. The tape passes from the roller 11 through said friction guide clamp 17' and thence on to the feed wheel 18 having a series of properly spaced feeding pegs 19 adapted to engage the notches on the tape to positively and accurately feed it through the machine.

This feed wheel is mounted on one end of a shaft 20 upon which the feed wheel is angularly adjustably secured in any suitable manner such as by a set screw, not shown, but which is in all respects similar to other set screws hereinafter mentioned.

This shaft extends through an elongated boss 21 formed on the upright frame 3, and at the other end of the shaft there is mounted a spider or disk 22 to which is secured a Geneva star wheel 23. The spider or disk is secured to the shaft 20 by a set screw 23', so that the spider is angularly adjustable about the shaft in the same manner that the feed wheel is angularly adjustable about the other end of the shaft. The star wheel is secured to this spider in any suitable manner as for example by means of a plurality of screws 24 passing through the star wheel and threaded into the spider.

The vertical bracket 5 of the frame is provided with an elongated horizontal boss 25 in which is journaled a drive shaft 26 lying directly over and parallel with drive shaft 20. This drive shaft is provided at one end directly over the feed wheel with a printing head 27 angularly adjustably mounted on the shaft and adapted to be held in adjusted position by means such as the set screw 28. The printing head has a slot 29 adapted to receive the type to be printed from, and this type is adjusted in the slot by means of a

threaded pin 30 which is threaded through a collar 31 and extends into engagement with the type so that by threading the pin in or out and putting suitable blanks if necessary behind the first type, the type may be adjusted longitudinally in the printing head. The collar 31 is in turn adjustably secured to the shaft as by set screw 32; and if desired it may be interlocked with the printing head to move around the shaft with the printing head as one piece.

On the opposite end of the drive shaft 26 is mounted a disk 33 carrying a pin 34 adapted to co-operate with and drive the star wheel 23. This disk may be fixedly keyed to the shaft and at the outer end of the disk a suitable crank handle 35 may be mounted to rotate shaft 26.

At the left-hand end of the machine a suitable spring finger 36 is provided to press upon the tape and hold it flat against the wheel in the zone where the printing operation takes place.

The upper bracket 5 also carries an inking roller 37 mounted thereon in any suitable manner as by stub shaft 38 held by a nut 39 in a slot 40 in the horizontal arm of this bracket, so that the roller is adjustable in the slot. This bracket 5 as a whole is adjustable about an arc in the vertical frame concentric to the axis of shaft 20. This is accomplished by means of a bolt 41 (see Fig. 2) passing through the lower end of the bracket 5 and extending into a slot 42 in the form of an arc concentric to the shaft 20, and this bolt 41 is clamped in position by a nut 43. In this way the printing head, inking roller and star wheel pin may be adjusted angularly with respect to the feed wheel and the star wheel in the setting up of the machine.

In the adjustment of the machine it is necessary to so adjust the parts that the type in the printing head will lie against and normal to the tape on the line of the label on which the type is to be printed, at the time that the driving pin is at the bottom of a slot in the star wheel, so as to insure the proper synchronous movement of the tape with the printing head during the interval of the rotation of the printing head that the printing is taking place. For example, if the labels say are an inch long, the label tape wheel must be moved one inch for each rotation of the printing head, and that movement of one inch for the tape and hence that movement of one inch for the periphery of the feed wheel must be synchronous with the rotation of the printing head and must be so timed that the type will engage the labels on the proper line.

With the apparatus shown it is only necessary to line up the slot 29 for the type with the star wheel pin 34, and to then so adjust the star wheel on its spider as to bring the

proper part of the label in contact with the type when the type reaches the tape and lies against the same normal thereto. The use of the single set of type enables the operator to concentrate his attention on the maintenance of only that one set of type in proper registration, and the step by step movement provided avoids the difficulties encountered by back lash and the wear of the gear, as is experienced in the continuously rotating printing machines. Not only is the mechanism thus simple to adjust and maintain in proper operation, but due to lack of back lash, etc., smearing of the print on the tape is avoided and neat clean-cut printing obtained.

While I have described my invention in detail in its present preferred embodiment, it will be obvious to those skilled in the art, after understanding my invention, that various changes and modifications may be made therein without departing from the spirit or scope thereof, and I aim in the appended claims to cover all such modifications and changes.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a machine for printing on label tape, the combination of means for engaging the tape to positively feed it, a Geneva stop movement including a pin and a star wheel for driving the tape-feeding means to move the tape step by step, a rotary printing head co-operating with the tape and feeding means to print on the tape as it is moved step by step, and means for rotating the printing head synchronously with the pin, said printing head, star wheel and feeding means being relatively adjustable so that the parts can be so adjusted that the type will engage the tape and lie normal thereto when the pin is at the bottom of a slot in the star wheel:

2. In a machine for printing on label tape, the combination of a feed wheel for

the tape, a driving shaft for the feed wheel, a Geneva stop star wheel for driving said shaft and wheel step by step to feed the tape step by step, a printing head carrying a single set of type to print upon the tape at each step by step movement, a pin for driving the star wheel, and a drive shaft for rotating the pin and printing head synchronously, said pin and star wheel and said feed wheel and printing head being so adjustable that the type will engage the tape and lie normal thereto when the pin is at the bottom of a slot in the star wheel.

3. In a machine for printing on label tape, the combination of a feed wheel for the tape having means for engaging the tape to feed it positively, a drive shaft on which the wheel is mounted, a Geneva star wheel angularly adjustably mounted on the shaft for driving the shaft and wheel step by step, a second drive shaft, a pin for the star wheel mounted on said second shaft to be rotated thereby, a printing head on said last drive shaft adapted to be rotated synchronously with the pin and carrying a single set of type co-operating with the feed wheel to print on the tape at each step by step movement.

4. In a machine for printing on label tape, the combination of a feed wheel for the tape having means for engaging the tape to feed it positively, a drive shaft on which the wheel is mounted, a Geneva star wheel angularly adjustably mounted on the shaft for driving the same step by step, a second drive shaft parallel with the first, a pin for driving the star wheel mounted on said second drive shaft to be rotated thereby, and a printing head also mounted on said second drive shaft and angularly adjustable with respect thereto so as to be adjusted with respect to said pin.

In testimony whereof I have signed my name to this specification.

EMIL F. BUSINGER.