April 5, 1955 L. C. NIELD 2,705,453

IMPROVEMENTS IN PRINTING APPARATUS

Filed April 11, 1950 6 Sheets-Sheet 1

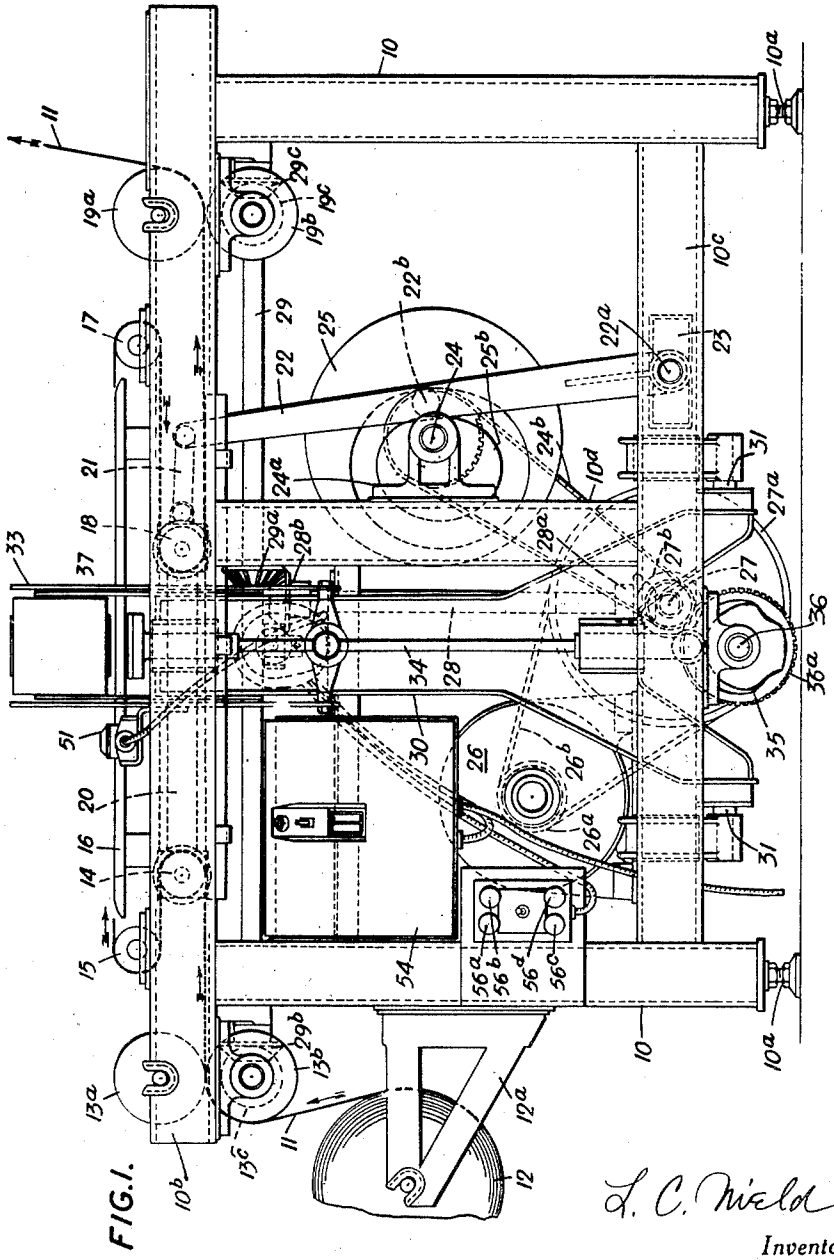


FIG. 1.

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IMPROVEMENTS IN PRINTING APPARATUS

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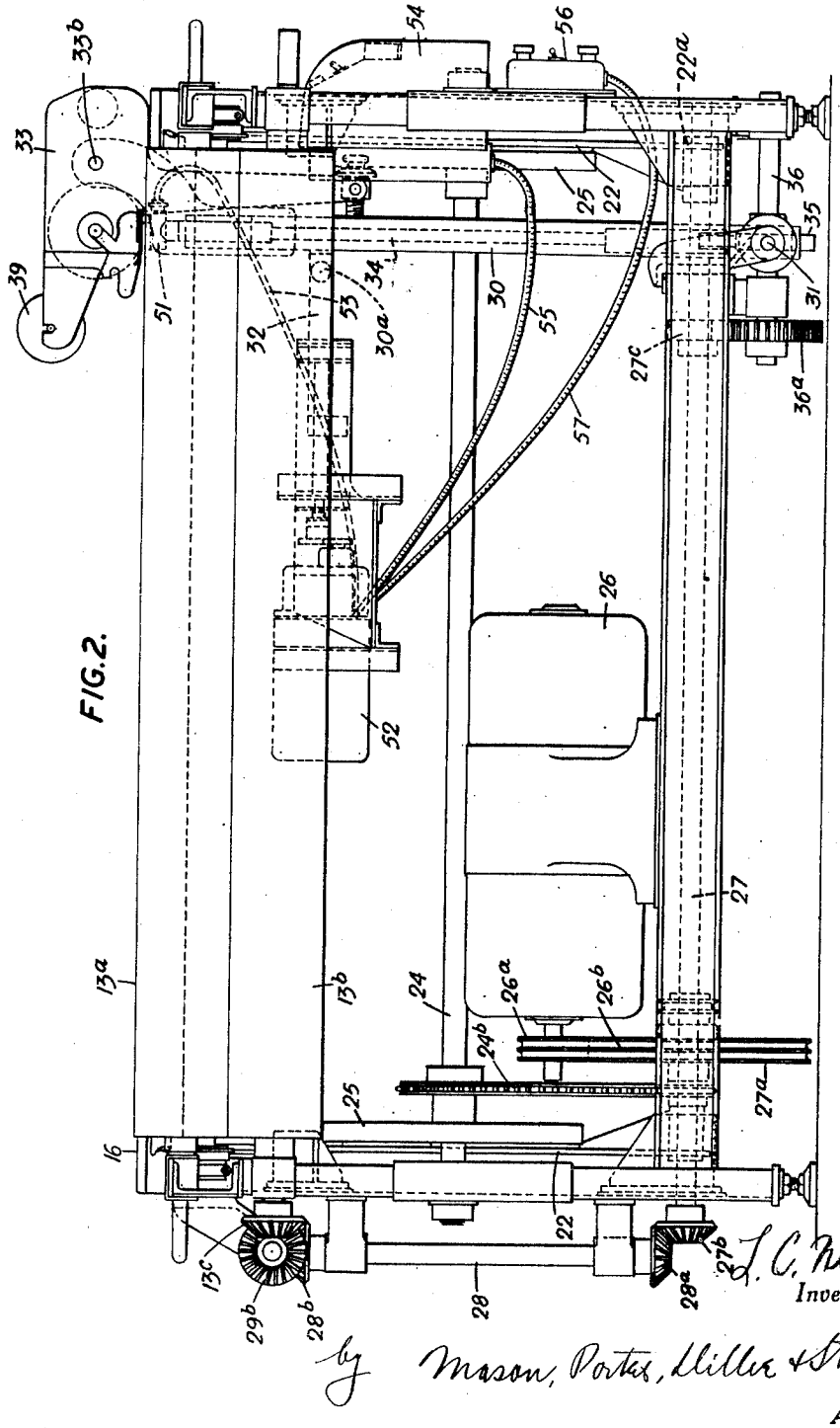


FIG. 2.

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IMPROVEMENTS IN PRINTING APPARATUS

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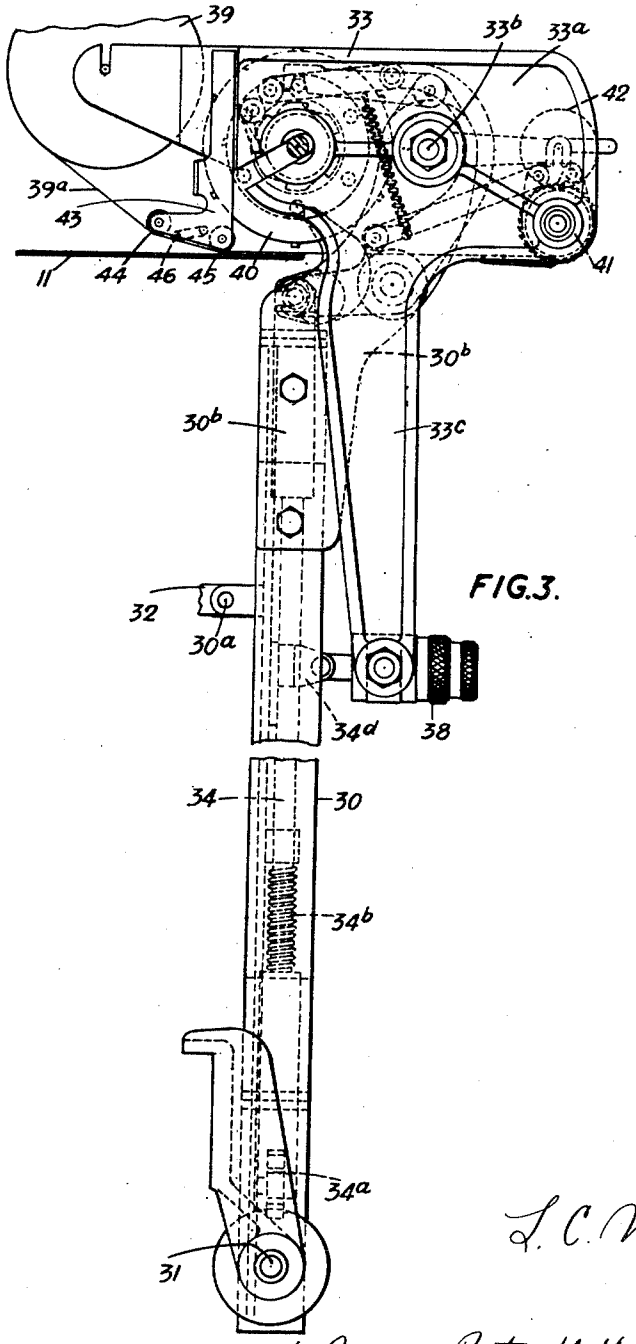


FIG.3.

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IMPROVEMENTS IN PRINTING APPARATUS

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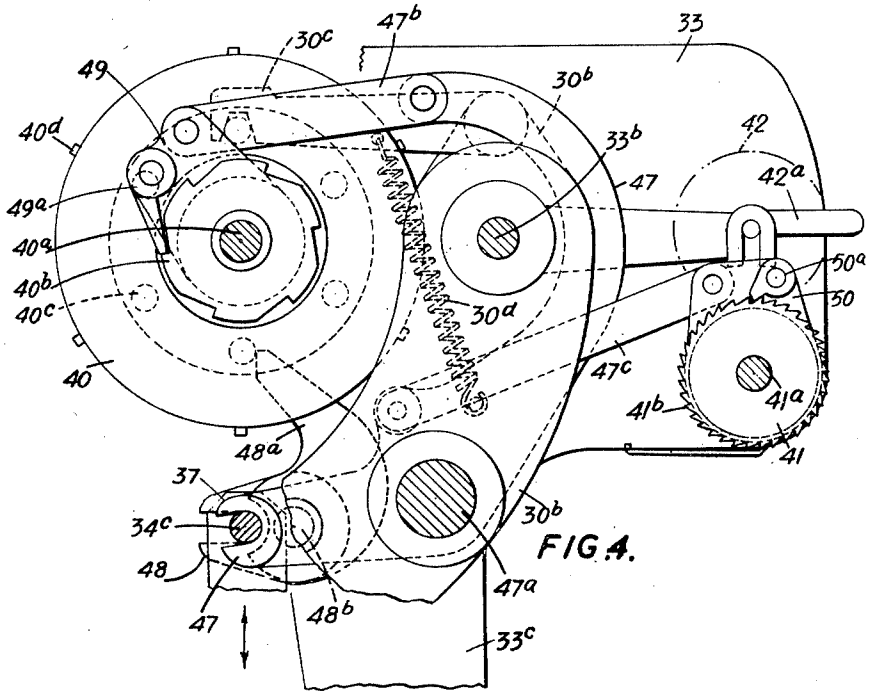


FIG. 4.

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IMPROVEMENTS IN PRINTING APPARATUS

Filed April 11, 1950 6 Sheets-Sheet 5

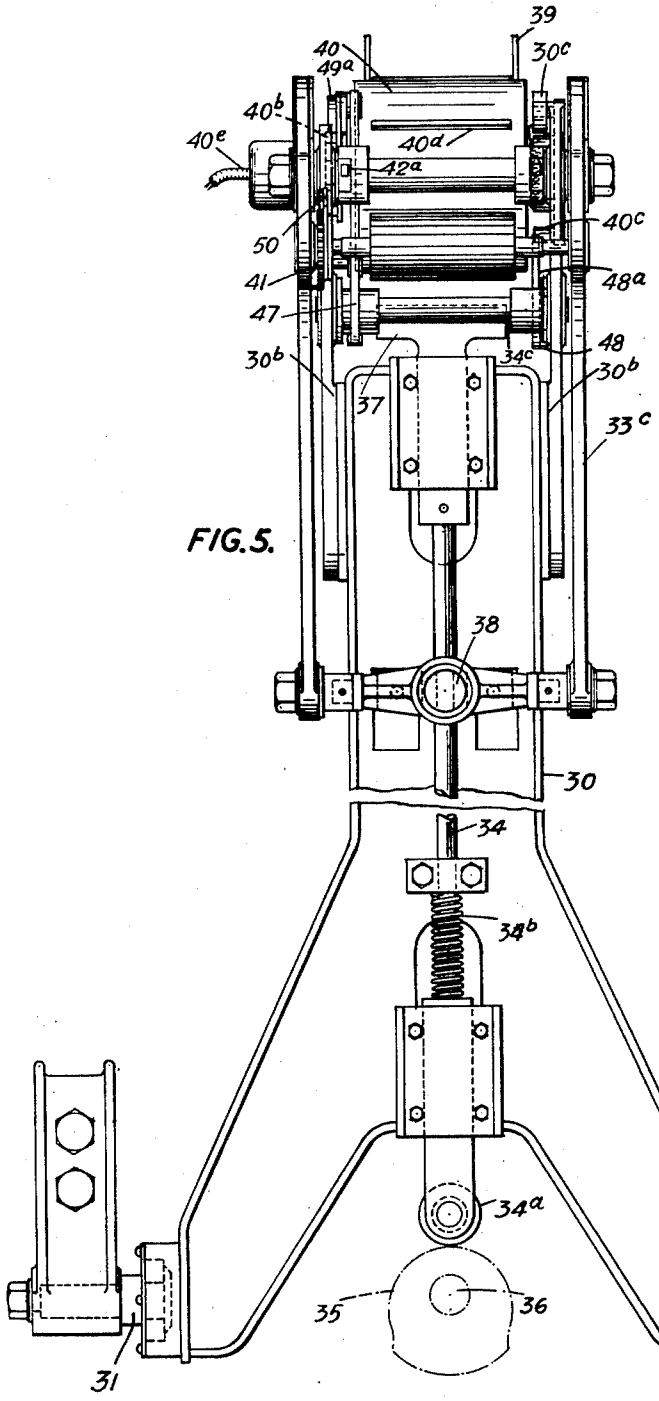


FIG. 5.

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IMPROVEMENTS IN PRINTING APPARATUS

Filed April 11, 1950 6 Sheets-Sheet 6

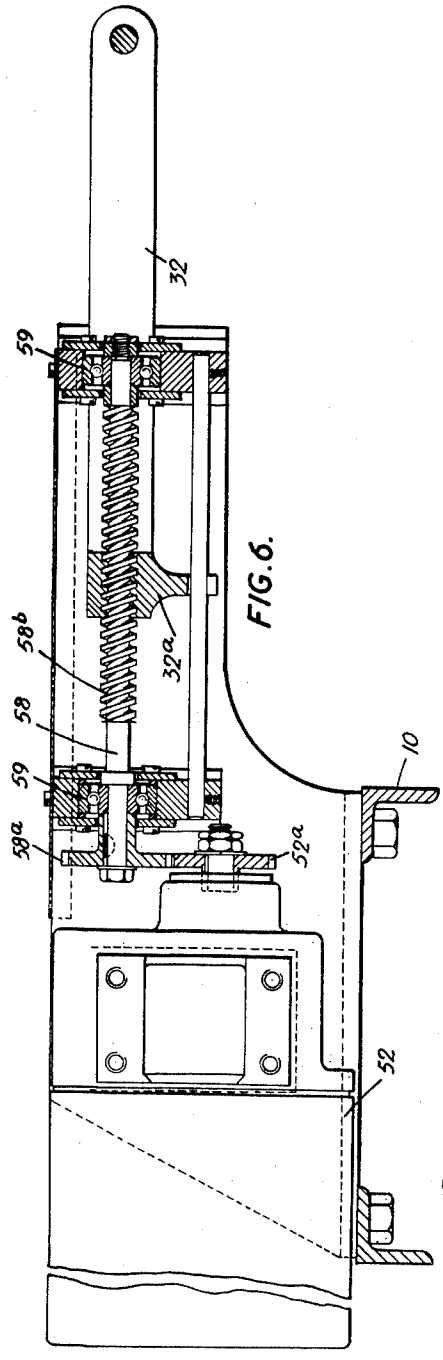


FIG. 6.

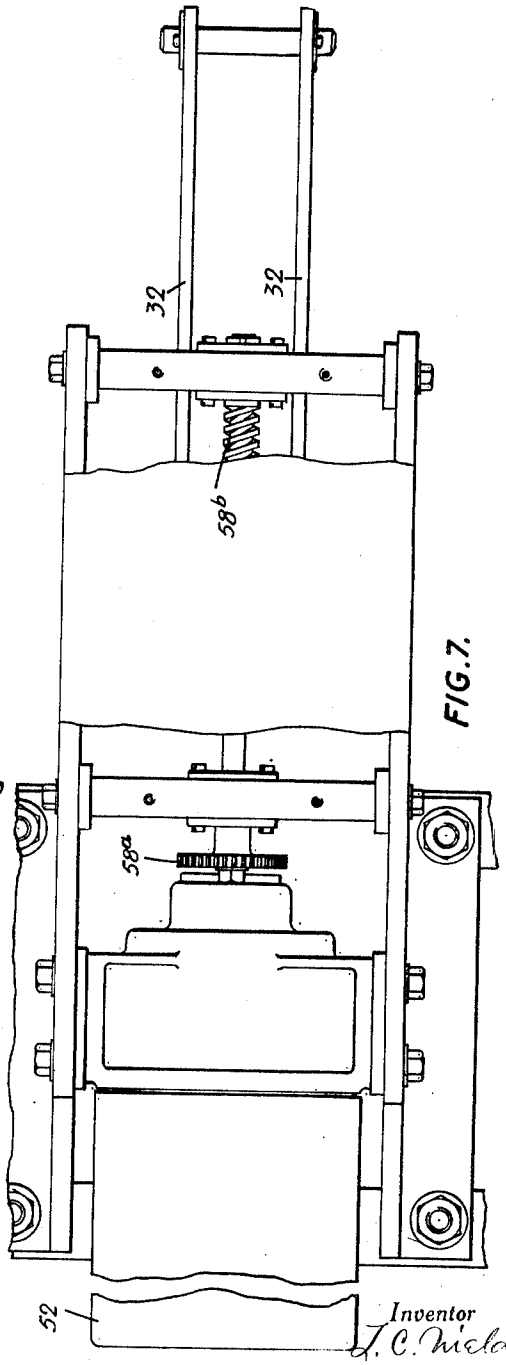


FIG. 7.

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United States Patent Office 2,705,453 Patented Apr. 5, 1955

2,705,453

IMPROVEMENTS IN PRINTING APPARATUS

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Application April 11, 1950, Serial No. 155,181

26 Claims. (Cl. 101—288)

The present invention relates to the marking, printing, engraving, stamping or the like (hereinafter for the sake of simplicity referred to collectively as stamping) of insignia, emblems, designs or the like upon a longitudinally displaceable web of material such for example of cloth, paper or other flexible material and especially upon a marginal part thereof.

More especially, the invention relates to machines of the kind which embody a stamping head and an anvil and means for causing relative displacement of the stamping head and anvil to cause them to approach one another to perform a stamping operation and then to withdraw away from one another.

The chief feature of the present invention consists in that a stamping head is mounted for angular displacement about a pivot which is substantially parallel with the path of travel of the web and is spaced from the stamping head and spaced away from the face of the web so that by angular displacement of the stamping head about its pivot the position of the stamping head can be readily adjusted in a direction transverse of the path of travel of the web to enable it to follow variations in the transverse disposition of the web.

It is often necessary to print marks on a relatively narrow marginal band of a moving web, for example on the selvedge of a moving web of textile material and it is not easy to cause the margin or selvedge of such webs of material to move in an exactly straight and constant course. Thus difficulty can be experienced in ensuring that the printing is correctly positioned in the margin or selvedge.

A further feature of the invention therefore consists of automatically adjusting the transverse position of at least the stamping head to compensate for transverse variations in the position of the moving web and more especially in the position of the edge of the moving web.

The compensating adjustment i. e. adjustment of the transverse position of the head is preferably carried out automatically under the control, for example of a feeler engaging the edge of the materials or of a photo-electric device viewing the material or an edge thereof.

The term stamping head when used herein is intended to mean a head for stamping, printing, marking, embossing or otherwise similarly operating upon the web by a stamping operation.

A further feature of the invention consists in a self-contained stamping head that is to say a stamping head which is provided with the necessary elements required for performing the printing, impressing, embossing or like operation, so that such elements are commonly displaceable with the stamping head. For example, if a die or type on the stamping head requires to be inked then the stamping head will contain an inking device for the die whilst if a die is arranged to print with the aid of a transfer paper, then the transfer paper and its feeding mechanism will be contained in the stamping head.

The stamping head and the anvil may be commonly transversely displaceable or adjustable and in order to enable the stamping pressure to be adjusted means may be provided for adjusting the initial spacing between the anvil and the head.

The stamping head may embody a displaceable die carrier bearing a succession of dies and adapted to be progressively advanced to bring the dies successively into operative position. The die carrier may consist of a drum carrying dies, certain of which may be unlike, at spaced intervals around its periphery.

The die carrying drum may contain a heating element but preferably it contains a plurality of stationary heating elements positioned to correspond with the positions of the dies when the drum is stationary.

The use of a die carrying drum as referred to above has certain advantages. For example it enables unlike dies to be brought into operation in succession and it enables a number of stationary heating elements to be employed as referred to above so that the dies, before each printing operation, can be heated when stationary in inoperative positions.

If the printing is carried out with the aid of transfer paper, the head may include a support for a roll of transfer paper and a take-up means for feeding the transfer paper past the die or dies.

The transfer paper may be displaced in a direction transverse to the direction of movement of the web and both the die carrier or drum and the transfer paper take-up means may be advanced automatically by the relative withdrawal of the head and anvil after each stamping operation.

It will be appreciated that with the above arrangement the feed movement of the transfer paper between each stamping opration may be relatively short so that the speed of feed of the transfer paper may be quite slow.

In a preferred form of apparatus according to the invention a stamping head is mounted on an upstanding column pivoted at or adjacent its lower end about an axis parallel to the direction of movement of the web and capable of a small degree of oscillation about its axis to adjust the position of the stamping head transversely of the path of travel of the web. The anvil is linearly guided by the column so as to be capable of sliding relatively thereto and is reciprocated towards and away from the stamping head by means of a shaft borne by the column and actuated by a cam at or adjacent the lower end of the column.

The stamping head is pivoted to the column about an axis lying perpendicular to and offset to one side of the axis of the column to enable the die or dies to be set relatively to the anvil by angular displacement of the head relatively to the column and the head has a downward extension which is connected to the column through a micrometer mechanism to facilitate precise adjustment of the head relatively to the anvil.

In the preferred form of construction the die carrying drum and the transfer take-up means are intermittently driven by ratchet mechanisms operated by bell crank levers pivoted to the head and actuated by the movement of the anvil away from the head.

The invention will be further described with particular reference to the accompanying drawings which illustrate a preferred form of apparatus for printing at spaced intervals on the selvedge of a moving web of textile cloth and in which:

Fig. 1 is a side view of the apparatus.

Fig. 2 is an end view.

Fig. 3 is an end view in more detail of the stamping or printing head.

Fig. 4 is a fragmentary end view in still more detail of the upper part of the stamping head, certain parts being omitted.

Fig. 5 is a side view corresponding to Fig. 3.

Fig. 6 is a side view partly in section of part of a mechanism for transversely adjusting the stamping head.

Fig. 7 is a plan view corresponding to Fig. 6.

In the drawings a frame generally denoted **10** is mounted on adjustable shoes **10***a*. A web of cloth **11** is fed from a supply roll **12** mounted on a bracket **12***a* fitted at one end of the frame **10**. The web passes (as indicated by the arrows) between first upper and lower nip rolls **13***a*, **13***b* respectively (serving as feeding rolls) around a first take-up roll **14**, round a first guide roll **15**, over a web supporting table **16**, over a second guide roll **17**, around a second take-up roll **18**, between second upper and lower nip rolls **19***a*, **19***b* respectively (serving as conveying rolls) and then to a batching device or other mechanism (not shown).

The lower nip rolls **13***b*, **19***b* are positively driven

(by means hereinafter described) at the same surface speed, which speed is the normal speed of the web.

The two take-up rolls **14** and **18** are interconnected longitudinally by link members **20** and form a roller carriage which is longitudinally slidable between side frame members **10***b*. The roller carriage is pivotally connected to link rods **21** which are pivoted to the upper ends of oscillatable levers **22**. The lower ends of the levers **22** carry bearing rolls **22***a* longitudinally slidable in guide slots **23** on longitudinal frame members **10***c*.

The levers **22** are provided with cam follower projections **22***b*.

A shaft **24** is rotatably mounted on brackets **24***a* carried by vertical frame members **10***d*. Cam wheels **25** mounted on the shaft **24** are provided with cam grooves **25***b*. The cam follower projections **22***b* ride in these cam grooves **25***b* whereby on rotation of the shaft **24** and wheels **25** a reciprocating motion is applied to the upper end of the connecting rods **22** to reciprocate the two take-up rolls **14, 18**.

A variable speed motor **26** drives a transverse shaft **27** by means of belt drive **26***b* in conjunction with wheels **26***a* and **27***a*. The transverse shaft **27** drives a vertical shaft **28** by means of cog wheels **27***b* and **28***a*.

The vertical shaft **28** drives a transverse shaft **29** by means of cog wheels **28***b* and **29***a*. The transverse shaft **29** drives the lower nip rolls **13***b*, **19***b* by means of cog wheels **29***b*, **13***c* and **29***c*, **19***c* respectively. The shaft **27** also drives the shaft **24** (by means of chain drive **24***b*).

The cam wheels **25** are rotated at such a speed that the roller carriage, in moving from back to front of the machine (i. e. from left to right in Fig. 1), accelerates for a distance of one inch to reach a velocity equal to half the linear cloth speed, maintains this velocity for six inches during which period a printing operation (to be hereinafter described) is performed, and then decelerates for one inch to reach the end of the stroke. On the return stroke the carriage accelerates for four inches and then decelerates for four inches.

It will thus be seen that as the take-up rolls **14, 18**, move to the right the web feed from the nip rolls **13***a*, **13***b* will be absorbed by the increasing length of the loop of web passing around the take-up roll **14** between rolls **13***b* and **15** so as to bring the web temporarily to a standstill between the guide rolls **15, 17** until the take-up rolls **14, 18** approach the end of their stroke to the right. During this short period when the web between the guide rolls **15** and **17** is stationary there will be a corresponding decrease in the length of the loop of web around the take-up roll **18** so that the conveyance of the web by the nip rolls **19***a*, **19***b* can continue in spite of the temporarily stationary condition of the web between guide rolls **15** and **17**.

The take-up rolls **14, 18** thus act oppositely in relation to the web and their action is reversed on movement to the left which causes the web then to move between guide rolls **15** and **17** at a speed greater than normal.

An upstanding column **30** is pivotally mounted at its lower end on trunnions **31** and inclination of this column from the vertical is controlled by a tie-rod **32** pivoted to lugs **30***a* on the column **30** and actuated by means hereinafter described. The upper part of the column **30** carries brackets **30***b* bolted thereto. The stamping head, generally indicated by the numeral **33**, has side frame members **33***a* through which it is pivoted at **33***b* to the upper end of the bracket **30***b*.

A vertical shaft **34** is disposed adjacent to and borne by the column **30** and carries a cam follower **34***a* at its lower end which co-operates with a cam **35** mounted on a shaft **36**. The shaft **27** drives this shaft **36** by means of toothed wheels **27***c*, **36***a* to rotate the cam **35** and thereby impart a periodic vertical reciprocatory motion to the shaft **34**. The cam follower **34***a* is resiliently urged into contact with the cam **35** by means of a spring **34***b*. The upper part of the rod **34** is connected to an anvil **37** borne by the column **30**. A micrometer adjustment mechanism **38** is carried by downward extensions **33***c* of the side frame members **33***a* and pivotally connected to a lug **34***d* on the column **30** whereby the position of the head **33** relative to the column **30** may be finely adjusted for a purpose to be described later herein.

The side frame members **33***a* carry a roll of printing transfer paper **39**, a die carrying drum **40** mounted on a bearing **40***a* and having spaced dies or types **40***d* thereon, and a transfer paper feed roll **41** mounted on a bearing **41***a* and adapted to draw a web **39***a* of transfer paper from the roll **39**. A waste transfer paper roll **42** is mounted above the feed roll **41** and retained in position by latch arms **42***a* which pivot at **33***b* as the waste roll increases in diameter.

The side frame members **33***a* are provided with depending arms **43** which carry tensioning rolls **44, 45** and a feeler roller **46** intermediate the latter which operates a pilot switch which is adapted to trip a relay to cut off the electric power supply and thus to stop the apparatus in the event of breaking or finishing of the transfer paper.

In order to prevent the anvil **37** from becoming coated with the transfer medium, a trip catch (not shown) may be introduced into the anvil shaft **34**, so that as soon as the apparatus is stopped the anvil is prevented from rising.

The anvil **37** carries a pair of pins **34***c* one at each side thereof, of which one engages with a forked lever **47** pivoted at **47***a* and of which the other engages with a forked lever **48** pivoted at **48***b* which is coupled with a stop lever **48***a*, the two forming a bell crank lever.

A locating lever **30***c* is pivotally connected to the upper part of one of the brackets **30***b* and urged downwardly by means of a light spring **30***d* to engage with locating studs **40***c* on the type drum, which studs also co-operate with the upper end of the stop lever **48***a*.

Link rods **47***b*, **47***c* are pivotally connected to the lever **47** and to pivoted ratched levers **49, 50** respectively. The ratchet levers are provided with pawls **49***a*, **50***a* which co-operate with ratchet teeth **40***b*, **41***b* on the type drum **40** and waste paper feed roll **41**. The type drum is heated to a suitable temperature by internal electrical elements (not shown) atached to a non-rotating spider, which elements lie on the same radii as the type on the type drum when stationary. Suitable thermostatic control (not shown) can be arranged to provide and maintain a predetermined temperature range. **40***e* indicates the lead to a source of electricity (not shown).

The stamping device operates in the following manner:

Upward movement of the anvil shaft **34** turns the levers **47**, **48***a* clockwise whereby pawls **49***a*, **50***a* slide over the ratchet teeth **40***b*, **41***b*, and whereby the upper end of the lever **48***a* moves away from the path of locating studs **40***c*. The type drum and transfer paper remain stationary. At the upper limit of stroke of the anvil, the anvil presses the selvedge firmly against the transfer paper and type on the type drum to print the selvedge. The setting of the type drum **40** relatively to the anvil **37** can be adjusted by means of the micrometer mechanism **38** to adjust the pressure between the type and the anvil.

Downward movement of the anvil shaft **34** turns the levers **47**, **48***a* anti-clockwise whereby pawls **49***a*, **50***a* engage the ratchet teeth **40***b*, **41***b* to rotate the type drum **40** through 60° and waste paper roller **41** respectively to draw approximately a quarter inch of transfer paper and to present the next succeeding type to the fresh portion of transfer paper therebeneath. At the same time locating lever **30***c* cooperates with its locating stud **40***c* and the lever **48***a* moves inwardly behind its next succeeding locating stud **40***c* whereby to temporarily prevent further anti-clockwise movement of the type drum.

A photo-electric head **51** (Fig. 1) is mounted at one side of the side frame members **33***a* to view the path of the adjacent selvedge of the web of cloth **11**. The photo-electric head **51** is connected to an amplifier **54** through conduits **53** and **55**. The amplifier **54** is connected to a control panel **56** and both the amplifier **54** and the control panel **56** are connected to an adjusting motor **52** by conduits **55** and **57** respectively. The control panel is provided with adjustable control elements **56***a*, **56***b*, **56***c* and **56***d* respectively. The precise construction and mode of operation of the amplifier **54** and the control panel **56** and of the motor **52**, does not form part of the present invention and such equipment can be purchased from specialist electrical engineering companies.

The photo-electric cell is preferably set so that when the moving web is in its correct transverse position rela-

tively to the stamping head, the web obscures one-half of the sensitive face of the photo-electric cell and the motor **52** remains inoperative. When the web moves transversely in one direction or the other this will result in a change in output from the photo-electric cell. The output of the cell is amplified by the amplifier **54** and fed to the adjusting motor **52**. The motor is of a special type and is constructed as a motor-generator. The motor has two fields and their senses are such that when they are equally energised no rotation of the motor-generator rotor will occur. When more or less than half of the face of the photoelectric cell is illuminated then one of the motor fields will receive more current than the other field and the motor will then rotate to carry out an adjusting movement. The generator part of the motor serves to feed a stabilising voltage back to the control box and hence to the amplifier to prevent hunting. The sensitivity of the motor **52** to changes of output of the photo-electric cell.

Alternatively the motor **52** could be controlled by any suitable electrical control equipment under the influence of a feeler engaging the edge of the moving web.

The adjusting motor **52** is provided with a toothed drive wheel **52***a* which engages a toothed wheel **58***a* on a shaft **58** to rotate the latter. The shaft **58** is mounted on ball bearing assemblies generally denoted **59**. The shaft **58** is screw threaded at **58***b*. The tie rods **32** carry a threaded cross member **32***a* associated with the threaded portion **58***b* of the shaft **58** whereby rotation of the shaft **58** causes horizontal displacement of the rods **32** to adjust the inclination of the arm **30** and thus the transverse position of the type drum and anvil to follow the selvedge to be printed.

I claim:

1. In an apparatus for the stamping of a moving web of material successively at spaced intervals along its length, an upstanding column pivoted adjacent its lower end about a horizontal axis substantially parallel to the direction of travel of the web, a stamping head frame structure pivoted adjacent the upper end of said column, at least one die mounted on the stamping head frame structure, means on the frame structure for supporting a roll of transfer paper, take-up means on the frame structure for drawing transfer paper past the die, a co-operating anvil mounted on said column, means for causing relative displacement of the die and anvil to cause them to approach one another to perform a stamping operation and then to withdraw away from one another, means for angularly adjusting the relative angular positions of the column and stamping head frame structure to adjust the initial spacing between the die and the anvil, and means for adjusting the angular position of the column to adjust the position of the stamping head transversely of the path of travel of the web to compensate for variations in the transverse position of the web.

2. In a stamping device according to claim 1, means associated with the anvil for automatically operating said take-up means to advance the transfer paper on relative withdrawal of the anvil and stamping head.

3. In a stamping device according to claim 1 a displaceable die carrying drum mounted on the stamping head frame structure, a succession of dies on the drum adapted to be brought successively into operative position by rotation of the drum, and means associated with the anvil adapted automatically to advance the drum and said take-up means on relative withdrawal of the stamping head and anvil to bring a fresh die and a fresh portion of transfer paper into operative positions.

4. In a stamping device according to claim 3, a micrometer mechanism between the column and the stamping head frame structure to facilitate precise adjustment of the stamping head relatively to the anvil.

5. In a stamping device according to claim 1, a stamping head pivoted to the column about an axis at right angles to and offset to one side of the longitudinal axis of the column to enable the setting of the stamping head and anvil to be adjusted, and a micrometer mechanism between the stamping head and the column to facilitate precise adjustment of the die relatively to the anvil.

6. In a stamping device according to claim 1, guide means on the column for linear guidance of the anvil, a rotatable cam adjacent the lower end of the column, and a shaft between the cam and the anvil for enabling the cam to cause reciprocation of the anvil.

7. In a stamping device according to claim 1, a die carrying drum mounted on the stamping head frame structure, a succession of dies on said drum, ratchet means for intermittently advancing the drum, ratchet means for intermittently advancing the transfer paper take-up means, and bell crank levers pivoted to the head and actuated by the reciprocating movement of the anvil for driving said ratchet means.

8. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head substantially spaced from the stamping head and the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure connecting the trunnion mounting to the stamping head, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation.

9. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting thereby permitting the stamping head and anvil to be commonly adjusted in a direction transverse to said path of travel by angular displacement of the supporting structure about said trunnion mounting, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation.

10. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a horizontal trunnion mounting for said stamping head substantially spaced from the stamping head and the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure connecting the trunnion mounting to the stamping head, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation.

11. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a horizontal trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting thereby permitting the stamping head and anvil to be commonly adjusted in a direction transverse to said path of travel by angular displacement of the supporting structure about said trunnion mounting, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation.

12. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head substantially spaced from the stamping head and the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure connecting the trunnion mounting to the stamping head, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a

stamping operation, and means for causing angular displacement of the supporting structure about said trunnion mounting for automatically adjusting the position of the stamping head transversely of said path of travel to compensate for transverse variations in the position of the moving web.

13. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, and means for causing angular displacement of the supporting structure about said trunnion mounting for automatically adjusting the position of the stamping head transversely of said path of travel to compensate for transverse variations in the position of the moving web.

14. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure connecting the trunnion mounting to the stamping head, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, a photo-electric device for viewing the web, a reversible driving means controlled by said photo-electric device so as to operate in one direction or the other when the web departs from a mean transverse position and a pivoted link connection between said driving means and said supporting structure enabling the stamping head to be automatically adjusted transversely of said path of travel to compensate for variations in the transverse position of the web.

15. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, a photo-electric device for viewing the web, a reversible driving means controlled by said photo-electric device so as to operate in one direction or the other when the web departs from a mean transverse position and a pivoted link connection between said driving means and said supporting structure enabling the stamping head and anvil to be automatically adjusted transversely of said path of travel to compensate for variations in the transverse position of the web.

16. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a horizontal trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, a photo-electric device for viewing the web, a reversible driving means controlled by said photo-electric device so as to operate in one direction or the other when the web departs from a mean transverse position and a pivoted link connection between said driving means and said supporting structure enabling the stamping head and anvil to be automatically adjusted transversely of said path of travel to compensate for variations in the transverse position of the web.

17. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a self-contained stamping head, an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure connecting the trunnion mounting to the stamping head, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, said self-contained stamping head embodying at least one die, means for supporting a roll of transfer paper, means for guiding the transfer paper past said die, and take-up means for advancing the transfer paper relatively to the die on relative withdrawal of the stamping head and anvil.

18. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a self-contained stamping head, an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure connecting the trunnion mounting to the stamping head, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, said self-contained stamping head embodying a rotatable die carrier supporting a plurality of angularly spaced dies adapted to be brought into a stamping position successively by rotation of the die carrier, means for supporting a roll of transfer paper, means for guiding the transfer paper past the die stamping position, take-up means for intermittently advancing the transfer paper and means operated by the relative movement of the stamping head and anvil for simultaneously advancing the die carrier and said take-up means during the relative withdrawal of the stamping head and anvil.

19. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, the stamping head being adjustably connected to said supporting structure to enable the initial spacing between the stamping head and anvil to be adjusted to adjust the stamping pressure.

20. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting, a micrometer adjusting device between the

stamping head and said supporting structure to enable the initial spacing between the stamping head and anvil to be adjusted to adjust the stamping pressure, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation.

21. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a self contained stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure common to the stamping head and anvil for connecting them to the trunnion mounting, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, said self-contained stamping head embodying a rotatable die-carrying drum supporting a plurality of angularly spaced dies adapted to be brought into a stamping position successively by rotation of the drum, a plurality of stationary heating elements within the drum positioned to correspond with the positions of at least certain of the dies when the drum is stationary, means for supporting a roll of transfer paper, means for guiding the transfer paper past the die stamping position, take-up means for intermittently advancing the transfer paper and means operated by the relative movement of the stamping head and anvil for simultaneously advancing the die carrier and said take-up means during the relative withdrawal of the stamping head and anvil.

22. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a horizontal trunnion mounting for said stamping head substantially spaced below the face of the web in a direction substantially perpendicular thereto and directed with its axis substantially parallel to said path of travel, an upstanding column connecting the trunnion mounting to the stamping head and extending in a direction approximately perpendicular to the face of the web at the location of the stamping head, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation.

23. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a self-contained stamping head, an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for the stamping head substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a supporting structure connecting the trunnion mounting to the stamping head, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, a photo-electric device for viewing the web, a reversible driving means controlled by said photo-electric device so as to operate in one direction or the other when the web departs from a mean transverse position and a pivoted link connection between said driving means and said supporting structure enabling the stamping head to be automatically adjusted transversely of said path of travel to compensate for variations in the transverse position of the web, said self-contained stamping head embodying at least one die, means for supporting a roll of transfer paper, means for guiding the transfer paper past said die, and take-up means for advancing the transfer paper relatively to the die on relative withdrawal of the stamping head and anvil.

24. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a self-contained stamping head, an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a trunnion mounting for said stamping head and anvil substantially spaced from the stamping head and from the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a common supporting structure for the stamping head and the anvil for connecting them to the trunnion mounting, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, a photo-electric device for viewing the web, a reversible driving means controlled by said photoelectric device so as to operate in one direction or the other when the web departs from a mean transverse position and a pivoted link connection between said driving means and said supporting structure enabling the stamping head to be automatically adjusted transversely of said path of travel to compensate for variations in the transverse position of the web, said self-contained stamping head embodying a rotatable die carrier supporting a plurality of angularly displaced dies adapted to be brought into a stamping position successively by rotation of the die carrier, means for supporting a roll of transfer paper, means for guiding the transfer paper past the die stamping position, and take-up means for intermittently advancing the transfer paper and means operated by relative movement of the stamping head and anvil for simultaneously advancing the die carrier and said take-up means during the relative withdrawal of the stamping head and anvil.

25. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a self-contained stamping head, an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a horizontal trunnion mounting for the stamping head and anvil substantially spaced below the stamping head and below the face of the web in a direction approximately perpendicular to the face of the web at the location of the stamping head and directed with its axis substantially parallel to said path of travel, a common supporting structure for the stamping head and anvil for connecting them to the trunnion mounting, a micrometer adjusting device between the stamping head and said supporting structure to enable the initial spacing between the stamping head and anvil to be adjusted to adjust the stamping pressure, means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation, a photo-electric device for viewing the web, a reversible driving means controlled by said photo-electric device so as to operate in one direction or the other when the web departs from a mean transverse position and a pivoted link connection between said driving means and said supporting structure enabling the stamping head and anvil to be automatically adjusted transversely of said path of travel to compensate for variations in the transverse position of the web, said self-contained stamping head embodying a rotatable die carrier supporting a plurality of angularly spaced dies adapted to be brought into a stamping position successively by rotation of the die carrier, means for supporting a roll of transfer paper, means for guiding the transfer paper past the die stamping position, take-up means for intermittently advancing the transfer paper and means operated by the relative movement of the stamping head and anvil for simultaneously advancing the die carrier and said take-up means during the relative withdrawal of the stamping head and anvil.

26. In an apparatus for the stamping of a longitudinally displaceable web of material successively at spaced intervals along its length, a stamping head and an anvil, means defining a longitudinal path of travel of the web between the stamping head and anvil, a pivotal mounting for said stamping head located at a substantial distance away from the face of the web in a direction substantially perpendicular thereto and directed with its axis substantially parallel to said path of travel so that the stamping head can move across the face of the web on angular displacement thereof about its pivotal mounting thereby permitting the position of the stamping head to be adjusted in a direction transverse to said path of travel, and means for intermittently relatively approaching and withdrawing said stamping head and anvil to perform a stamping operation.

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