

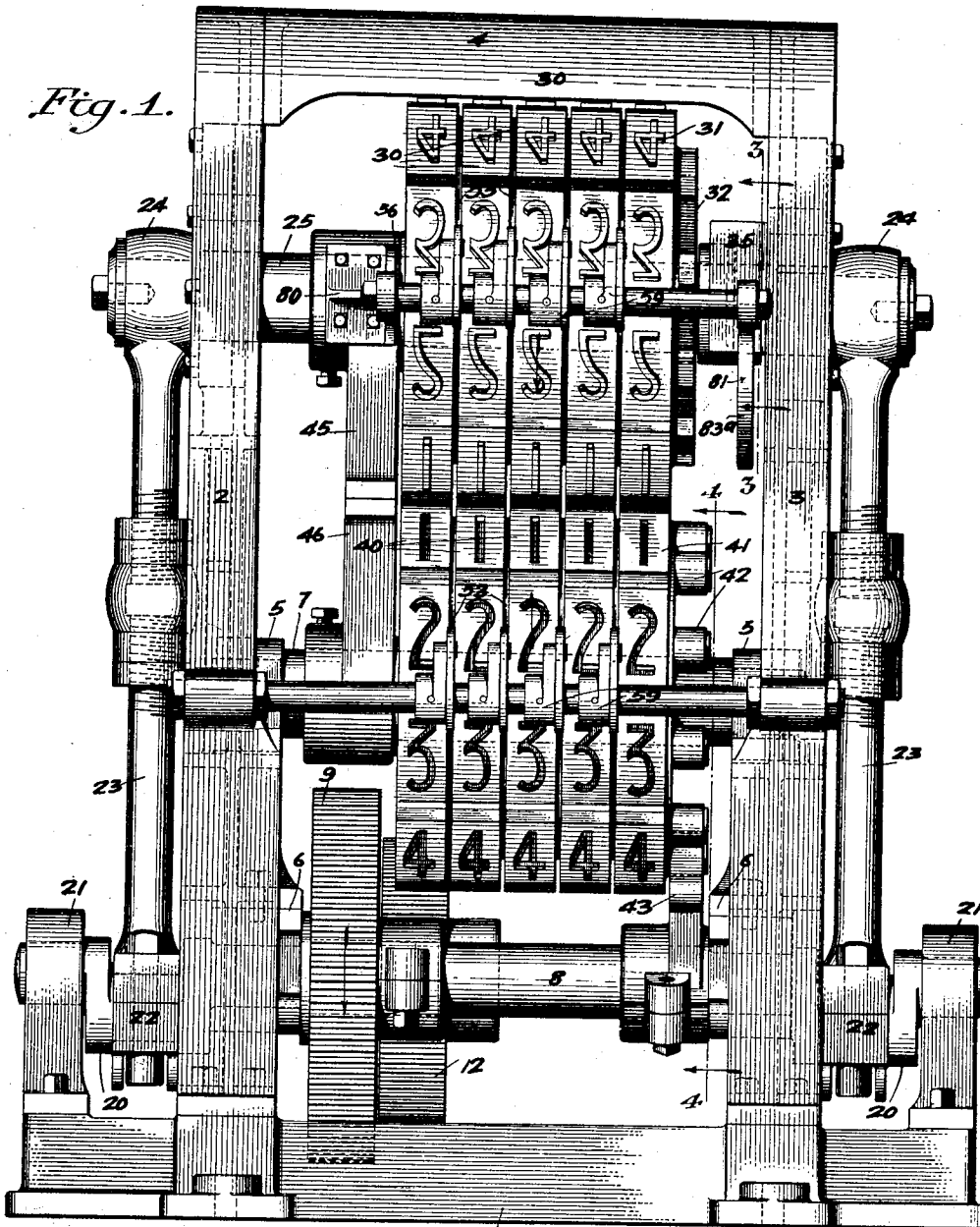
W. T. SULLIVAN.
METAL STAMPING MACHINE.
APPLICATION FILED APR. 22, 1920.

1,386,540.

Patented Aug. 2, 1921.

5 SHEETS—SHEET 1.

Fig. 1.



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5 SHEETS—SHEET 2.

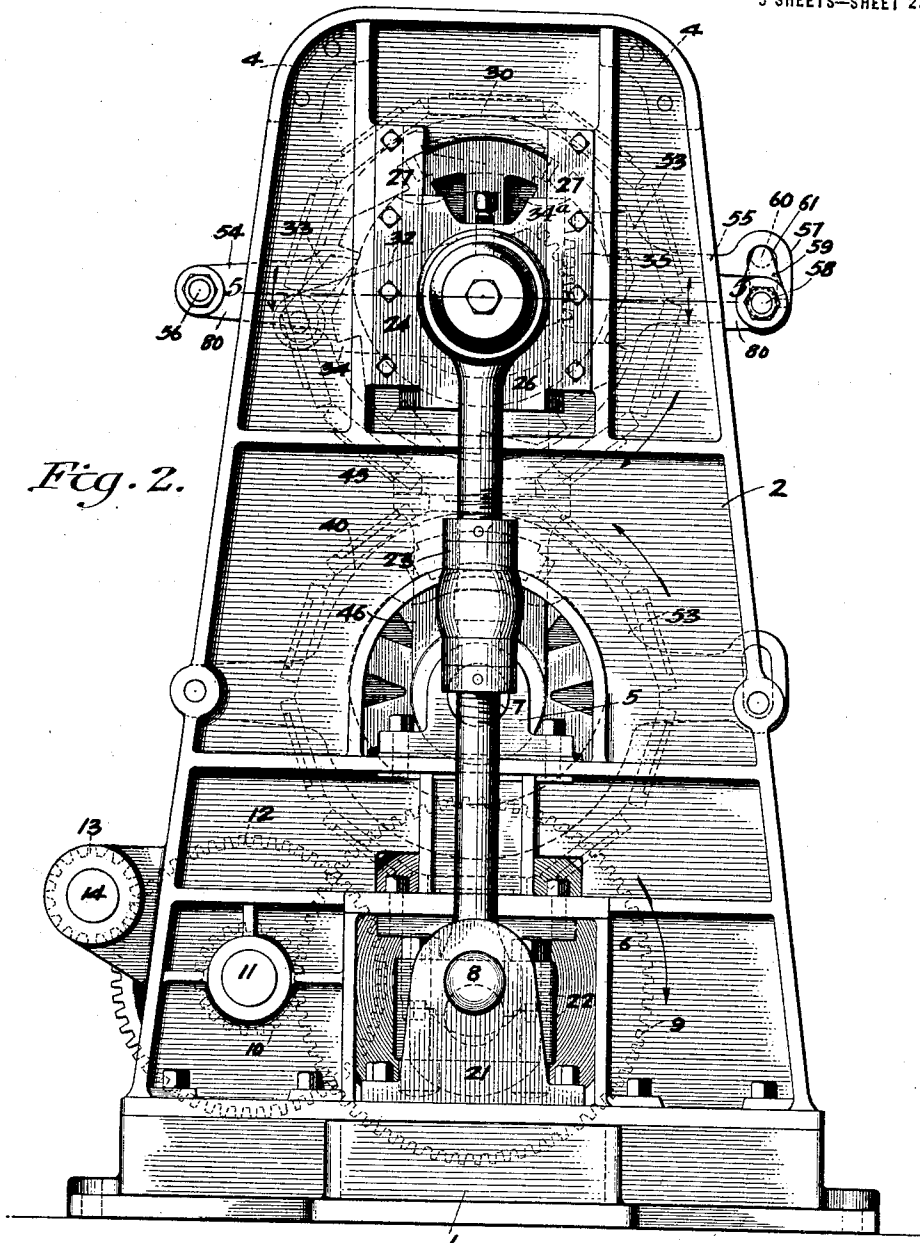


Fig. 2.

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5 SHEETS—SHEET 3.

Fig. 3.

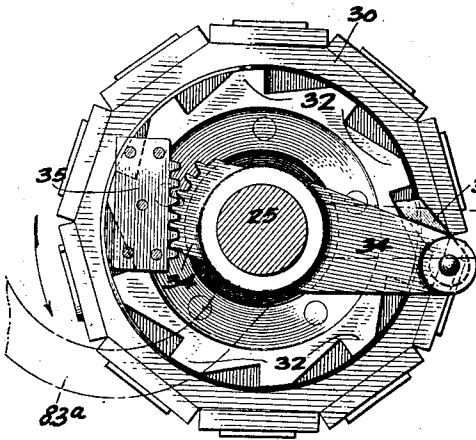


Fig. 5.

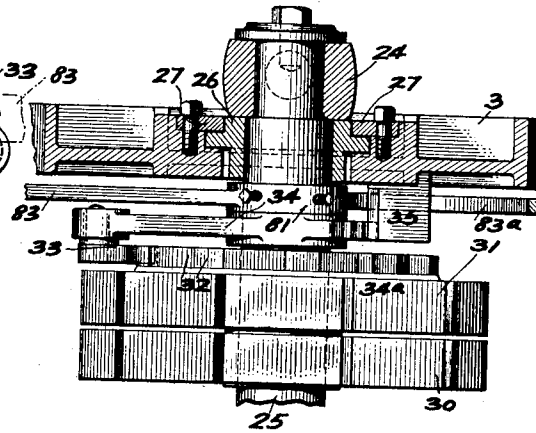
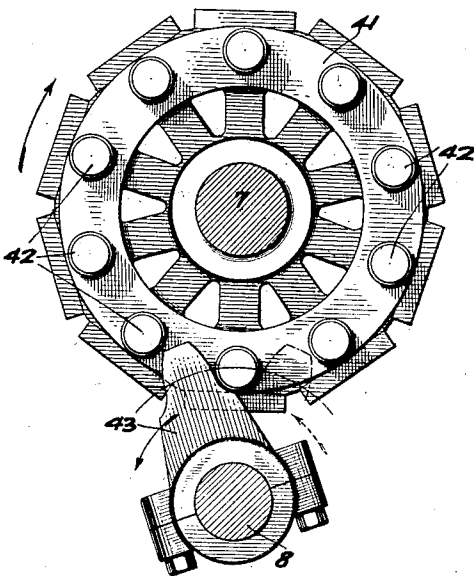


Fig. 4.



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5 SHEETS—SHEET 4.

Fig. 6.

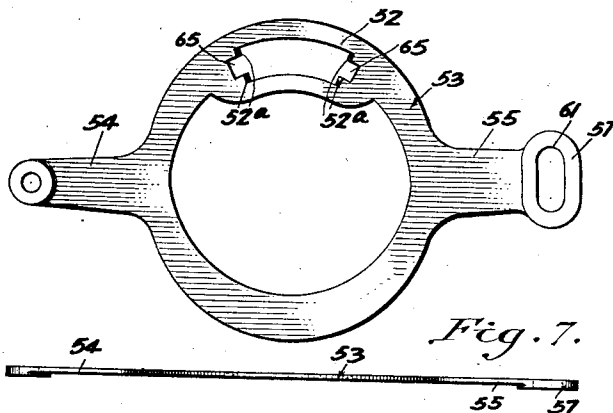


Fig. 8. Fig. 9.

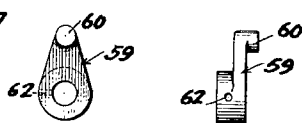


Fig. 7.

Fig. 15.

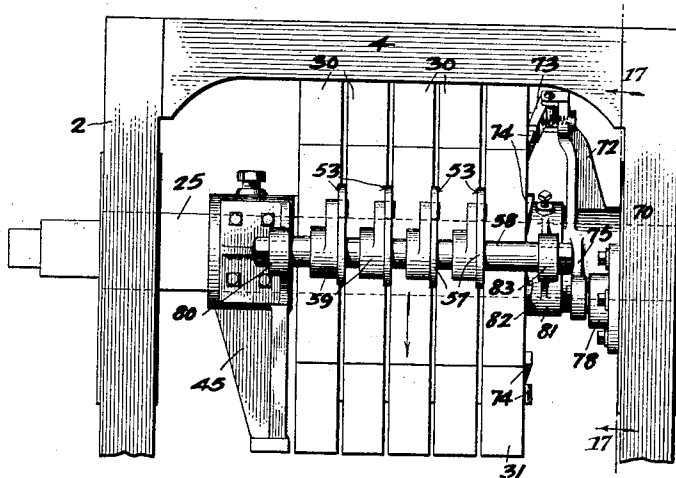


Fig. 17.

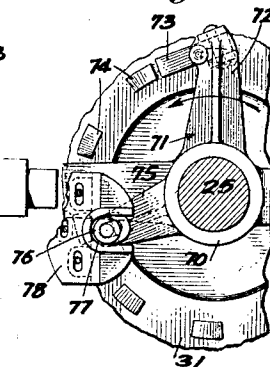
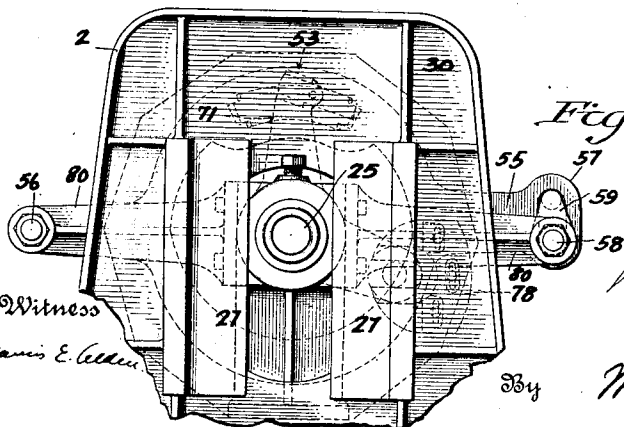


Fig. 10.



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5 SHEETS—SHEET 5.

Fig. 10.

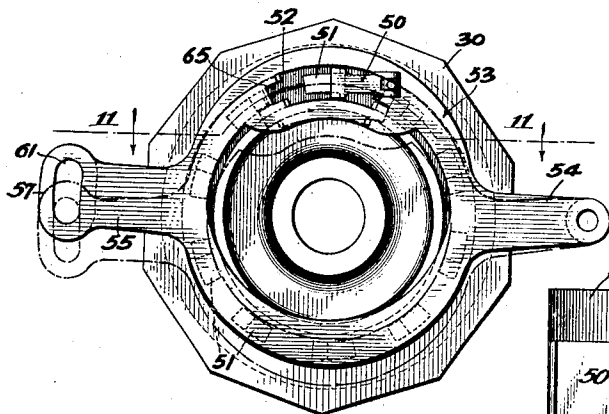


Fig. 14.

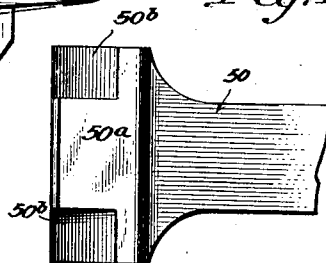


Fig. 11.

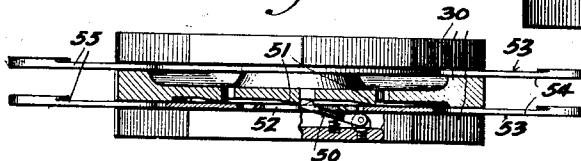


Fig. 12.

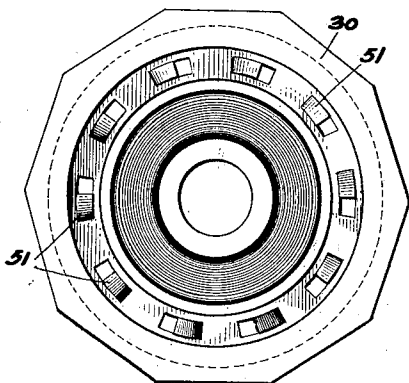
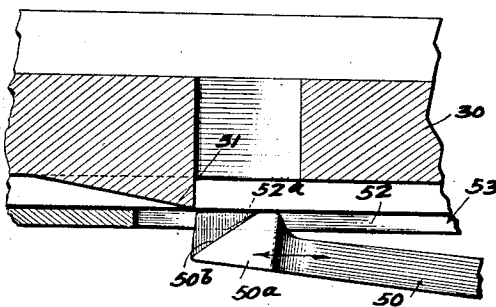


Fig. 13.



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UNITED STATES PATENT OFFICE.

WILLIAM T. SULLIVAN, OF CINCINNATI, OHIO.

METAL-STAMPING MACHINE.

1,386,540.

Specification of Letters Patent.

Patented Aug. 2, 1921.

Application filed April 22, 1920. Serial No. 375,731.

To all whom it may concern:

Be it known that I, WILLIAM T. SULLIVAN, a citizen of the United States, and residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented a new and useful Improvement in Metal-Stamping Machines, of which the following specification is a full disclosure.

This invention relates to automatic stamping machines, and is particularly designed for the production of license tags or the like, for use on motor-driven vehicles.

Objects of the invention are to produce a compact machine of the above nature, which will be automatic in operation, which will consecutively number and stamp sheet metal tags with embossed or depressed letters, and which provides means for making certain adjustments of the numbering disks, independently of one another.

Other objects, and certain advantages, will be disclosed in the following description and special reference is made to the drawings, forming part of this specification, in which:

Figure 1 is an elevation of my automatic stamping machine taken from the feed-in side.

Fig. 2 is a side elevation of the same viewed from the left of Fig. 1.

Fig. 3 is a detail section, taken on line 3, 3, Fig. 1, showing one method of rotating the upper series of disks.

Fig. 4 is a detail section taken on line 4, 4, Fig. 1, showing the method of rotating the lower series of disks.

Fig. 5 is a horizontal detail section on line 5, 5, Fig. 2, showing the construction of the guide for the upper disk-carrying shaft.

Fig. 6 is a detail face view of one of the controlling rings.

Fig. 7 is an edge view of the same.

Figs. 8 and 9 are respectively a face and an edge view of one of the controlling ring locking devices.

Fig. 10 is a face view, showing the relation of a controlling ring to a pawl and numbering disk.

Fig. 11 is a plan section on line 11, 11, Fig. 10.

Fig. 12 is a face view of one of the numbering disks.

Fig. 13 is an enlarged detail section showing the disengaging action of a pawl relative to a tooth of a numbering disk.

Fig. 14 is an inner face view of the end of a pawl.

Fig. 15 is an elevation showing a modification of the mechanism for rotating the upper series of disks.

Fig. 16 is an elevation of the same taken at right angles to Fig. 15, and viewed from the left of said figure, and

Fig. 17 is a sectional view on line 17, 17, Fig. 15.

The numeral 1 designates a base plate upon which are mounted side supporting frames 2, 3, suitably bolted to said base plate, the said frames being connected at their tops by cross-braces 4. Each frame is provided with bearing blocks 5, 6, the blocks 5 supporting a disk-carrying shaft 7 and the blocks 6, a double crank-shaft 8. The crank shaft 8 is rotated through the medium of a gear train, the spur-gear 9 of which is fastened to the shaft 8. The gear 9 meshes with a gear 10 mounted upon shaft 11; and a gear 12, also mounted upon the shaft 11 meshes with gear 13 of the pulley shaft 14. Any form of power may be used, and clutch means may be suitably arranged to control the operation of shaft 8.

The cranks 20 at the opposite ends of the crank-shaft 8 are located adjacent to and on the outside of frames 2, 3, and the outer ends of the said cranks are suitably supported at 21. Bearings 22 of the two-piece adjustable pitmen 23 engage the cranks 20, and the upper end of each pitman is provided with a bearing ring 24 for engagement with disk-bearing shaft 25 located adjacent the top of the frames 2, 3. The pitmen 23 are made extensible by means of turn-buckles, in order to allow for the insertion of materials of varying thicknesses between the two sets of disks, and, as is contemplated herein, to allow for the insertion of two strips of material placed together and punched to form duplicate tags, as required by ordinance for motor driven vehicles.

The shaft 25 is supported for vertical reciprocation in slide plates 26, suitably fixed in guides 27 of the frames 2, 3, (see Figs. 2 and 5).

Mounted centrally and loosely upon the shaft 25 are a plurality of numbering disks, each disk being provided with ten faces, the said faces carrying in consecutive order, raised numerals beginning with zero and ending with nine.

Mechanism for operating the series of disks for consecutive numbering will be described herebelow.

The end disk 31 is provided upon its outer face with ten ratchet teeth 32, and these teeth are engaged by a pawl 33, pivoted to a lever 34, mounted for oscillation upon the shaft 25, and provided, at the side opposite the pawl 33, with gear teeth 34^a, meshing with a stationary rack 35 fastened to the frame 3. At each rotation of the shaft 8 the pitmen 23 and shaft 25 will be raised and lowered and the lever 34 with its pawl will act to rotate the disk 31, through an arc 36°, the series of disks being slightly raised before being rotated. Lower disks 40, equal in number to the upper disks, are mounted loosely upon the shaft 7 in opposition to the said upper disks, the numerals upon their faces being in the form of depressions, for the reception of the corresponding raised numerals of the upper disks. The disk 41 of the lower series is provided with roller projections or teeth 42, for engagement by an arm or tooth 43 mounted rigidly and concentrically upon the shaft 8, and at each rotation of the said shaft 8, the disk 41 is moved through an arc of 36° to correspond to a similar movement of the upper disk 31. Adjacent the left hand disk of respectively the upper and lower series of disks are attached die members 45, 46, rigidly set upon the shafts 25 and 7. The member 46 is stationary. The member 45 has vertical movement only. The opposing faces of these die members are provided with a serial letter, or the like, which letter remains the same throughout the consecutive numbering operations.

The mechanism for rotating the disks 30 and 40, for consecutive numbering is best illustrated in Figs. 10 and 14 inclusive. Upon the left side of the disks 31 and 41, (as viewed in Fig. 1), and of the three disks to the left of these, spring pressed pawls 50 are mounted, (see Figs. 10 and 11). These pawls engage with teeth 51 of the adjacent disk, but through the means of arcuate openings 52 of the controlling rings 53, the said pawls can only engage that tooth opposite an opening 52, and as a result, each disk makes nine-tenths of a rotation before the pawl engages the tooth of the adjacent disk.

The arcuate openings 52, (see Figs. 6, 10 and 11), are shaped at their extremities as at 65, to conform to the configuration of the pawls 50, each pawl having a substantially T-shaped head 50^a and inclined portions 50^b at each side to engage the inclined portions 52^a of the openings 52. Upon the rotation of one of the disks, a pawl riding against the controlling ring, will be pressed through the opening 52, will engage a tooth of the adjacent disk, rotating the disk until the inclined portions 50^b engage and travel along the inclined portions 52^a to disengage the pawl from its tooth, (see Fig. 13).

In order to provide a means for allowing

the setting of the disks 30, 40, to any desired position independently of one another, the controlling rings 53 are provided with diametrically opposed extensions 54, 55.

The extension 54 is designed to pivot upon a cross-rod 56 held horizontally by the brackets 80 and 81, more fully described hereafter, while the extension 55 is provided with a slotted head 57 through which a cross rod 58 extends, the rod being held in a manner similar to the rod 56. Mounted upon the rod 58 and adjacent each extension 55 and slotted head 57, is a locking device 59, designed to hold its corresponding controlling ring 53 in such a position as will allow a pawl to engage a tooth through the opening 52 therein. An extension 60 engages the upper extremity of the slot 61 of the head 57 to hold the plate 53 in its normal position, as above described, and a pin is inserted through the opening 62 to secure the device 59 in its locked position upon the rod 58.

A modification of the means for rotating the disk 31, is shown in Figs. 15 to 17, inclusive.

The annular hub portion 70, of a bell crank lever 71, is mounted loosely upon the shaft 25 adjacent the end disk 31, and the said lever is provided on its one arm 72 with a spring pressed pawl 73 for engagement with teeth 74. The opposite arm 75 is provided with a roller 76, adjustably engaged in a slot 77 of a plate 78, the said plate being rigidly fastened to the side frame 3. When the shaft 25 is raised, the arm 75, being held from vertical movement by the engagement of roller 76, with slot 77; arm 72 and its pawl 73 are rotated in the direction of the arrow, (see Fig. 17), and by the engagement of the pawl with a tooth, the disk 31 is rotated as described in the first form.

As a means for supporting the rods 56, 58, I provide brackets 80 and attach the same horizontally and one at each side of the die member 45. Between the lever 71 and the disk 31, I place a bracket 81, having a central annular portion 82 surrounding the shaft 25 and set rigidly thereon, and provide diametrically opposed arms 83 projecting from said annular portion, the outer ends of said arms and the outer ends of the brackets 80 acting to support the rods 56, 58.

In the first form of my invention, namely that is while the disk 31 is rotated by means of the lever 34 and rack 35, one of the arms 83^a of the bracket 81 is curved as shown, and passes under the rack 35.

The operation of the machine is as follows:

Upon the rotation of the shaft 8, the pitmen 23 are first raised, then lowered, and the shaft 25, disks 30, disks 31, and die

member 45 move in unison therewith. The shaft 8 rotates through a small arc before the pawl 33, (see Fig. 3) engages a tooth 32, of the end disk 31, the object being to raise the disks 30 from contact with the disks 40 a sufficient distance to allow for the subsequent rotation of the said disks. When the shaft 8 has made one half of a rotation (the initial position of the cranks of the same being shown in Figs. 1 and 2) the disk 31 will have been rotated through an arc of 36° to bring the numeral one in opposition to the numeral one of the disk 41, which disk is rotated simultaneously with the disk 31 through means of the tooth 43 mounted upon the shaft 8. Upon further rotation of the shaft 8, the disks 30 and 31 will move toward the disks 40 and 41 to complete the stamping operation.

The means for accomplishing the consecutive numbering operation have been fully described as well as the operation of the same. When it is desired, for any reason, to throw one of the pawls out of operative relation to its disk, the locking device 59 of the corresponding controlling-ring 53 is disengaged from the slotted head 57, and the controlling-ring is allowed to assume the position shown in dotted lines in Fig. 10 in which position the location of the opening 52 prevents the pawl from engaging with any tooth on the adjacent disk.

Having described my invention, I claim:

1. In a machine of the class described, a frame, a pair of die wheels relatively having a series of cooperating companion dies rotative for bringing the companion dies thereof into a cooperative position for stamping a piece of material inserted therebetween, and means for reciprocating one of said die wheels toward and from the other comprising a shaft for supporting and journaling the die wheel, bearings for said shaft slidably mounted in said frame, a rotative crank shaft, and connecting rods connecting with said crank shaft and respectively with the opposite ends of said die wheel supporting shaft.

2. In a machine of the class described, a frame, a pair of die wheels relatively having a series of cooperating companion dies, said wheels rotative for bringing the companion dies thereof into a cooperative position for stamping a piece of material inserted therebetween, a shaft carrying and journaling one of said die wheels slidably mounted in said frame, a rotative crank shaft, connections between said crank shaft and die wheel carrying shaft for reciprocating the wheel toward and from its companion die wheel with each cycle of said crank shaft, and means for rotating each of said die wheels for bringing the dies of each thereof consecutively into their operative position.

3. In a stamping machine, a frame, oppositely arranged coacting stamping wheels each having an annular series of respective cooperating dies, a shaft for carrying and journaling one of said stamping wheels slidably supported in said frame for reciprocating the stamping wheel toward and from the companion stamping wheel, a rotative crank shaft and connections between said crank shaft and said stamping wheel carrying shaft.

4. In a machine of the class described, a frame, a lower series of stamping wheels, a stationary shaft for supporting and journaling said lower series of stamping wheels, and upper series of stamping wheels coacting with said lower series of stamping wheels, a shaft for reciprocating and journaling said upper series of stamping wheels, slidably supported in said frame for reciprocating said upper series of stamping wheels toward and from the lower series of stamping wheels, a crank shaft journaled in said frame, connecting rods respectively connecting with the opposite ends of said stamp wheel reciprocating shaft and crank shaft.

5. In a machine of the class described, a frame, a lower series of stamping wheels each having an annular series of character stamping dies, mechanism for intermittently rotating said wheels one by the other for consecutively advancing the dies to a stamping position, an upper series of stamping wheels each having an annular series of character stamping dies adapted to respectively coact with companion dies of said lower series of stamping wheels, mechanism for intermittently rotating said wheels one by the other for consecutively advancing the dies to a stamping position, a shaft slidably mounted in said frame supporting said upper series of stamping wheels, a crank shaft journaled in said frame, and connections between said shafts for reciprocating the upper stamping wheels with each cycle of said crank shaft.

6. In a machine of the class described, a frame, a lower series of stamping wheels each having an annular series of character stamping dies, mechanism for intermittently rotating said wheels one by the other for consecutively advancing the dies to a stamping position, an upper series of stamping wheels each having an annular series of character stamping dies adapted to respectively coact with companion dies of said lower series of stamping wheels, mechanism for intermittently rotating said wheels one by the other for consecutively advancing the dies to a stamping position, a shaft slidably mounted in said frame supporting said upper series of stamping wheels, a crank shaft journaled in said frame, and connections between said shafts for reciprocating the upper stamping wheels with each cycle of said crank shaft,

rotative means carried by said crank shaft cooperating with said lower stamping wheels for imparting a consecutive die advance with each cycle of the crank shaft, and step
5 motion imparting means for said upper stamping wheels actuated by the shaft supporting said upper stamping wheels.

7. In a machine of the class described, a frame, a lower series of stamping wheels,
10 each wheel having an annular series of character stamping dies, mechanism for intermittently rotating said wheels one from the other for consecutively advancing the dies to a stamping position, an upper series
15 of stamping wheels, each wheel having an annular series of character stamping dies, mechanism for intermittently rotating said wheels one by the other for consecutive die advance to a stamping position, means for
20 reciprocating said upper stamping wheels toward and from the lower stamping wheels, rotative means for imparting a consecutive die advancing motion to said lower stamping wheels in timed periodicity with the re-
25 ciprocating strokes of said upper stamping means, and ratchet mechanism for imparting a consecutive die advancing motion to said

upper stamping wheels in timed periodicity with reciprocating strokes of said upper stamping wheels.

8. In a stamping machine, a frame, oppositely arranged coacting stamping wheels, designated as first and second wheels, each wheel having an annular series of character dies, means for reciprocating the first wheels toward and from the second, a rotative toothed segment intermittently coacting with the second wheel for consecutive die advance to stamping position, pawl and ratchet mechanism cooperating and reciprocating with said first stamping wheel, and a stationary rack member coacting with and operating said pawl for intermittently rotating said first stamping wheels and consecutively advance the dies of the second wheels to a stamping position.

In witness whereof, I hereunto subscribe my name, as attested by the two subscribing witnesses.

WILLIAM T. SULLIVAN.

Witnesses:

FRANCIS E. ALDEN.
L. A. BECK.