Dec. 7, 1954 F. W. RUSSELL 2,696,166

MECHANISM FOR IMPRESSING INDICIA ON CYLINDRICAL OBJECTS

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FIG. 1

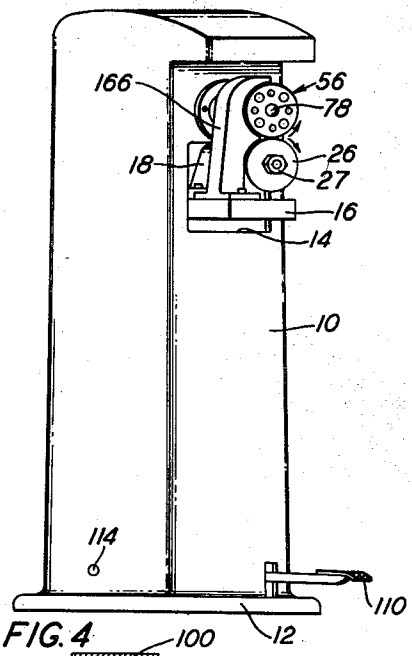


FIG. 5

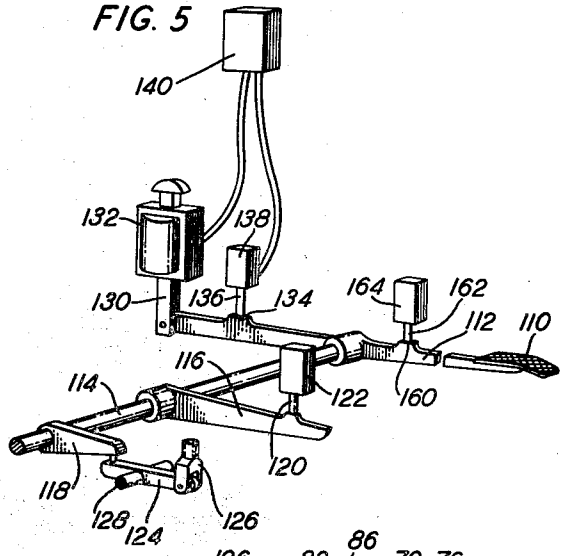


FIG. 3

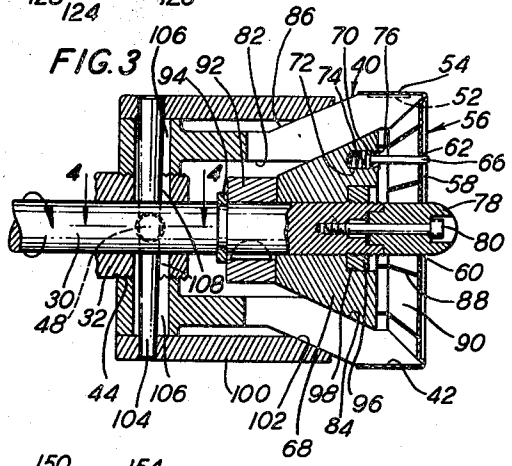


FIG. 4

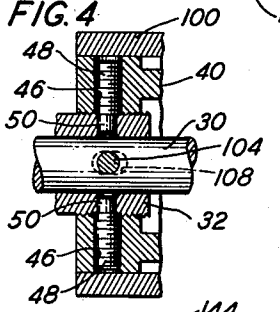


FIG. 2

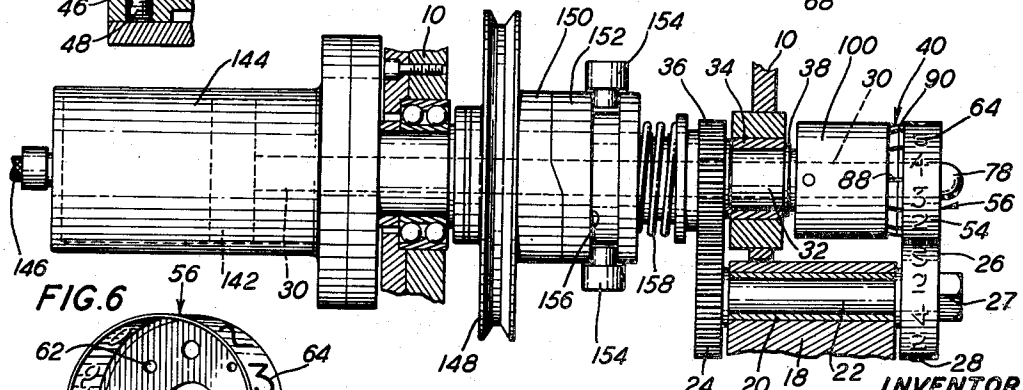
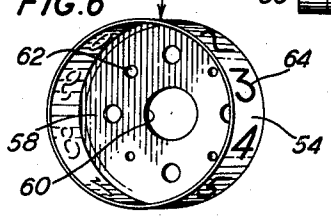


FIG. 6



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MECHANISM FOR IMPRESSING INDICIA ON CYLINDRICAL OBJECTS

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Application November 4, 1949, Serial No. 125,411

4 Claims. (Cl. 101—6)

This invention relates to mechanism for impressing indicia on cylindrical objects and more particularly, but without restriction thereto, to impressing indicia on the cylindrical sides or the rims of cup-shaped members such as number wheels used in registering devices.

Heretofore, registering mechanisms of various sorts have employed wheels on the rims or cylindrical surfaces of which indicia have usually been printed or lithographed. In situations where such indicia bearing wheels are subjected to hard use such as being exposed to possible physical contact or where the same are exposed to extremes of temperature and atmospheric conditions such as meter wheels used in gasoline pumps for purposes of indicating gallonage and price, lithographed or printed indicia on such wheels do not remain in good condition for long periods of time but become impaired due to the paint or ink used in printing or lithographing the indicia peeling or checking.

It is the object of the present invention to overcome these difficulties by providing mechanism with which indicia can be impressed into thin cylindrical surfaces of members such as the rim of a register wheel, said mechanism comprising an arbor and a die mounted for relative rotation and respectively having series of male and female indicia forming means on the peripheral surfaces thereof, the arbor being arranged to support the member on which indicia is being impressed and said arbor being expansible and contractable to facilitate the mounting of a member thereon and the removal of said member therefrom after indicia has been impressed in the cylindrical surface thereof.

It is another object of the invention to provide means for positively expanding and contracting said arbor, said means serving to securely hold the arbor in engagement with a member while being impressed with indicia and the impressed indicia on the member cooperating with the indicia forming means to maintain the member on the arbor during the indicia impressing process.

It is a further object of the invention to provide operating means for said indicia forming arbor and die which is simple and automatic, the same requiring only a minimum amount of physical exertion to initiate the automatic operation of the mechanism for supporting a member while being impressed with indicia and also automatically conditioning the mechanism so as to permit ready removal of a member therefrom at the completion of the indicia impressing operation.

Details of these objects and of the invention, as well as other objects thereof, are set forth in the following specification and illustrated in the accompanying drawing forming a part thereof.

In the drawings:

Fig. 1 is a perspective view of an encased device embodying the present invention for impressing indicia into cylindrical surfaces of members positionable upon an arbor comprising part of the mechanism.

Fig. 2 is an enlarged, fragmentary, vertical elevation of the indicia impressing means of the device shown in Fig. 1 and the control and operating means thereof.

Fig. 3 is a fragmentary sectional view, on a still larger scale, of the arbor for holding members while impressing indicia into the rims thereof and the mechanism for expanding and contracting said arbor.

Fig. 4 is a fragmentary, sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a perspective diagrammatic view illustrating the various controls and actuating mechanism for the indicia impressing device illustrated in Fig. 1.

Fig. 6 is a perspective view of a wheel having a cylindrical rim into which indicia have been impressed.

The indicia impressing mechanism comprising the present invention provides means for physically impressing indicia into the cylindrical surfaces such as the rims of register wheels or the like, whereby the physical outline of such indicia remains in the cylindrical surface of the wheel under all conditions of use. Said impressed indicia readily lend themselves to containing a pigmented coating of a color contrasting to another pigmented coating which may be applied to the cylindrical surfaces of the wheels from which the indicia have been depressed. If desired, these pigmented coatings may be of such nature that they may be subjected to baking and thus render the contrasting coatings extremely permanent and durable and capable of withstanding wide extremes of climatic and other conditions without impairing said coatings in any way.

Referring to the drawings, there is illustrated in Fig. 1 a housing **10** which may be of any suitable shape and size for purposes of preferably enclosing most if not all of the mechanism for controlling and operating the indicia impressing means of the mechanism. The housing is provided with a base **12** by which it may be anchored, if desired, to a floor surface. The front wall of the housing **10** is provided with an opening **14** through which a vertically movable table **16** projects horizontally. A projection **18** extends upward from table **16** and is provided at its upper end with a bearing **20** which rotatably supports a shaft **22**. One end of the shaft **22** has a spur gear **24** fixed thereto, said gear preferably having teeth which are elongated somewhat more than the usual teeth of spur gears for purposes to be described hereinafter. The other end of the shaft **22** has a cylindrical die **26** fixed thereto by any suitable means such as a nut **27**, said die having a series of male raised indicia forming members **28** formed on the periphery thereof. In the exemplary illustration herein, said indicia are raised above the cylindrical surface of the die **26**.

Disposed above the shaft **22** and parallel thereto is another shaft **30** which is rotatably and slidably supported within a sleeve **32**, said sleeve also being rotatable within a bearing **34** positioned within the front wall of the housing **10** of the mechanism as clearly shown in Fig. 2. The sleeve **32** is mounted to prevent axial movement thereof. Fixed to the sleeve **32** and meshing with gear **24** is another spur gear **36** having teeth similar to those on gear **24**, the elongated nature of said teeth serving to maintain the gears **24** and **36** in mesh with each other during limited vertical movement of table **16** which supports shaft **22**. A shoulder of the gear **36** is mounted in rotatable abutment with one end of bearing **34** and a split ring **38**, disposed within a suitable annular groove in sleeve **32**, abuts the other end of bearing **34** and thereby prevents longitudinal movement of sleeve **32** relative to the bearing **34**.

An arbor **40** having a cylindrical peripheral surface **42** is fixed to one end of the sleeve **32** by any suitable means such as threads **44**. Suitable apertures **46** extend radially through the inner end of the arbor **40** as shown in Fig. 4, the same being threaded to receive set screws **48** which extend into apertures **50** formed in sleeve **32** for purposes of preventing rotation of the arbor **40** relative to the sleeve after the arbor has been mounted thereon. Thus the arbor **40** is fixed to the sleeve so as to be rotatable therewith.

The cylindrical peripheral surface **42** of the arbor **40** is provided with a series of female indicia forming means which are respectively complementary to the male indicia forming means **28** on cylindrical die **26**. Thus, the female indicia forming means **52** comprise recesses into which the male indicia forming means **28** impress portions of the cylindrical flange or rim **54** of a member such as a register wheel **56**. In the exemplary illustration shown in the drawings, the register wheel **56** is shown to be substantially cup-shaped and the bottom of web **58** of the wheel **56** is disposed principally within a single plane. It is to be understood, however, that the web **58** of said wheel may be shaped other than as illustrated for purposes of adapting it to a hub or other means by which it may be supported within a register or any other mechanism in which such a wheel may be desired.

A wheel 56 which has been impressed with indicia by the mechanism comprising the present invention is shown in perspective view in Fig. 6. In this exemplary embodiment of the wheel, the web 58 is provided with a central aperture 60 through which a hub may extend when the wheel is completed for use in a register, for example. Said web is also provided with a plurality of apertures disposed in concentric rows about the central aperture 60, one of these apertures 62 being different in diameter from the other apertures and serving as indexing means, whereby the indicia 64 impressed into the rim 54 of the wheel may be suitably indexed relative to a hub or other mechanism used to support the wheel in a registering mechanism.

In the process of impressing the indicia 64 into the rim of the wheel, the indexing aperture 62 is also utilized by placing it over an indexing pin 66 for purposes of orienting each wheel blank with the arbor 40 when the blank is first mounted upon said arbor for purposes of having the indicia 64 impressed into the rim thereof. Said pin projects axially outward from a conical member 68, the principal functions of the latter being explained hereinafter. Pin 66 is preferably yieldably mounted relative to the collar member 68 in order to prevent damaging the pin in the event a register wheel blank is placed upon the arbor without using care in orienting the aperture 62 with the pin 66. As will be seen from Fig. 3, the inner end of the pin 66 is fixed to a disk 70 or plunger slidably mounted within a cylindrical socket 72, the disk 70 normally being biased outward by a spring 74. A threaded apertured plug 76 maintains the disk 70 against displacement from the socket 72 but permits axial movement of the pin 66. Mounting the wheel blanks upon the arbor is also facilitated by the provision of a centering stud 78 which is preferably detachably fixed to the outer end of the shaft 30 by a screw 80. The stud 78 is rounded at its outer end to aid in centering the aperture 60 in the wheel blank relative to the stud and arbor 40. The diameter of the stud 78 is preferably only a few thousandths of an inch smaller than the diameter of the aperture 60. The stud 78 is detachably connected to the end of the shaft 30 to permit the substitution of other centering studs of different shapes and diameters such as may be required to be used relative to different sizes of central apertures in other styles or configurations of webs in different register wheels into the rims of which it is desired to impress indicia.

In the exemplary embodiment illustrated herein, the indicia 64 are impressed into the rim of a register wheel 56 so as to be recessed below the outer cylindrical surface of said rim. Thus, the indicia 64 will be impressed into the series of female indicia forming recesses 52 provided in the peripheral surface 42 of the arbor 40. After such indicia have been impressed into the rim of the wheel 56 by the coaction of the die 26 with the arbor 40, it is necessary to remove the indicia indented wheel 56 from the arbor 40. For this purpose as well as for the purpose of firmly holding the peripheral surface 42 of the arbor against the inner surface of the rim 54 of the wheel, the arbor 40 is constructed as follows.

The arbor 40 is provided with a cavity 82 extending inward from the outer end thereof. Adjacent its outer end, the cavity has a frusto-conical surface 84. The exterior surface of the arbor 40 is also provided with a frusto-conical surface 86 substantially parallel to the frusto-conical surface 84 as is clearly shown in Fig. 3. The arbor 40 is provided with a plurality of radial slots 88 which extend inward from the outer end of the arbor to form a plurality of resilient segments 90 of substantially even width. In the exemplary embodiment illustrated herein, one female indicia forming cavity 52 is provided in the outer peripheral surface of each segment 90. It is to be understood, however, that this arrangement may be varied in accordance with the total number of indicia forming cavities or projections to be formed on the peripheral surface 42 of the arbor 40.

The peripheral surfaces of the segments 90 are moved into firm engagement with the inner surface of the rim 54 of the wheel 56 by means of the shaft 30 being moved toward the left, as viewed in Fig. 3, by mechanism to be described hereinafter. A conical member 68 is fixed to the shaft 30 adjacent its outer end and the conical surface thereof is substantially complementary to and slidably engages the frusto-conical interior surface 84 of the arbor 40 to cause the outer peripheral surfaces of the segments 90 to move outward into firm engagement with the inner surface of the rim 54 of the wheel. Conical member 68 is fixed to the shaft 30 by means comprising a collar 92 which is keyed thereto. The collar backs against a split ring 94 seated within a suitable annular recess within the shaft. The inner end of the conical member 68 is clamped against the collar 92 by a nut 96 seated within and operating against the bottom surface of a recess 98 extending axially into the outer end of the collar member 68.

Surrounding the major portion of the arbor 40 is a sleeve 100, the inner surface thereof closely conforming to the outer diameter of the lefthand end of the arbor, as viewed in Fig. 3 so as to be slidably guided thereon. The inner surface 102 at the other end of the sleeve is shaped so as to be frusto-conical and complementary to the outer frusto-conical surface 86 of the arbor. Sleeve 100 is fixed to shaft 30 by a pin 104 which extends through and snugly engages the walls of a suitable aperture in the shaft and apertures through the sleeve in alignment therewith. Thus the sleeve slides relative to the arbor 40 when the shaft 30 and conical member 68 are moved longitudinally relative to the arbor. As the conical member 68 is moved toward the left for purposes of expanding the segments 90 as described hereinabove, the sleeve 100 will also be moved toward the left and permit such expansion to take place.

After the indicia 64 have been impressed into the rim 54 of one of the wheels 56, it is necessary to contract the segments 90 so as to permit the depressed indicia 64 on the wheel to be disengaged from the female depressions 52 in the peripheral surfaces of the segments 90 of the arbor. Therefore, at the completion of the indicia impressing function of the die and arbor, the shaft 30 is moved toward the right as viewed in Fig. 3 and also moves with it sleeve 100 and conical member 68. During such movement, the inner surface 102 of the sleeve engages the outer frusto-conical surface 86 of arbor 40 and contracts the segments 90 thereof relative to each other so as to shorten the circumference of the peripheral surface 42 and thus permit the depressed indicia 64 in the wheel 56 to be freed from the female indicia forming recesses 52 in said peripheral surface of the arbor, whereby the wheel 56 may be removed from the arbor in a direction axially outward therefrom. Movement of the sleeve 100 and shaft 30 relative to the sleeve 32 is possible due to the provision of the short slots 106 in the arbor 40 and slots 108 aligned therewith in the sleeve 32, said slots slidably accommodating the pin 104 which connects the sleeve 100 to the shaft 30.

The operation of the indicia impressing mechanism comprising the present invention, as stated above, is mainly automatic and is effected by the following mechanism and operation thereof. An attendant initiates the operation of the mechanism by any suitable means capable of being actuated by the attendant such as a foot treadle 110 disposed adjacent the base 12 of the housing 10. Said treadle is mounted on one end of a lever 112 which is fixed intermediate its ends to a shaft 114 extending horizontally in the lower portion of the housing 10. Also fixed to the shaft 114 for movement therewith are several elongated fingers 116 and 118. The finger 116 coacts with a plunger 120 of switch 122 and by which it is actuated. Finger 118 coacts with one end of a short lever 124, the other end of said lever being connected to a link 126 engaging and by which table 16 is raised and lowered. The lever 124 is pivotally supported intermediately of its ends by a shaft 128 parallel to shaft 114. The end of lever 112 remote from the foot treadle 110 is pivotally connected to the lower end of the armature plunger 130 of a solenoid 132. A projection 134 on the lever 112 also coacts with the plunger 136 of switch 138 and by which it is actuated. Switch 138 controls the power furnished to the circuit of the solenoid 132 and a settable timing switch 140 is also connected in said circuit to control the same.

Shaft 30 is moved longitudinally in opposite directions by a piston 142 connected to the end thereof opposite the centering stud 78, said piston being disposed in an air cylinder 144 which is connected by suitable means such as one or more air hoses 146 to a source of compressed air for an air pump. Air may be introduced by suitable ducts and ports in the cylinder 144 to either side of the piston 142 for purposes of moving the shaft 30 in opposite directions. An electric motor, not shown,

is mounted within the housing 10 and is connected by any suitable means such as a pulley and a belt, not shown, to a pulley 148 which is rotatable relative to sleeve 32. One member 150 of a clutch is fixed to pulley 148 and a second member 152 of said clutch is keyed to sleeve 32 so as to be rotatable therewith but slidable longitudinally thereof. Clutch member 152 may be moved longitudinally of the sleeve 32 by a yoke 154 cooperable with a suitable annular groove 156 formed in the clutch member 152. A spring 158 normally biases the clutch engaging faces of members 150 and 152 into driving relationship with each other, whereby, when the pulley 148 is rotated by the motor referred to, the sleeve 32 and shaft 30 will also be rotated thereby. As stated above, the sleeve 32 and shaft rotate in unison although they may move longitudinally relative to each other. Such rotation in unison is assured by pin 104 which extends through shaft 30 and sleeve 32. When the pulley 148 drives sleeve 32 and shaft 30, gear 36 will also be rotated thereby and, in turn, drives gear 24 which rotates die 26 relative to arbor 40. Arbor 40 is driven by gear 36, as stated above.

To further explain the operation of the device, assuming that the arbor 40 has no wheel blank 56 mounted thereon, a wheel blank is placed thereon by an operator so that the indexing pin 66 extends through the indexing aperture 62 of the wheel blanks and the outer end of the arbor engages the web 58 of the wheel. The operator then partially depresses the foot treadle 110, thereby moving projection 160 on lever 112 relative to plunger 162 of switch 164 to permit said switch to close and operate a solenoid actuated valve, not shown, which controls the flow of air into the air cylinder 144. Air is thereby admitted against the righthand face of shaft 142 as viewed in Fig. 2, thus moving shaft 30, sleeve 100, and conical member 68 toward the left as viewed in Figs. 2 and 3. The segments 90 of the arbor are thereby expanded into firm engagement with inner surface of the rim 54 of wheel 56. The pressure within the air cylinder 144 will only be sufficiently great to move the shaft 30 so as to expand the segments 90 without rupturing or deforming the wheel 56 mounted on the segments of the arbor. The initial depression of the treadle 110 also partially elevates table 16 so as to bring die 26 more or less into engagement with the rim of wheel 56 positioned on arbor 40 as shown in Fig. 2. Such initial depression of the treadle 110 also moves the free end of the finger 116 away from plunger 120 of switch 122 and actuates a solenoid, not shown, which moves yoke 154 and causes clutch member 152 to engage rotating clutch member 150, the latter being constantly rotated by pulley 148 during the operation of the mechanism. Thus, rotation of the die 26 and arbor 40 is initiated.

Said initial depression of the treadle 110 further causes plunger 136 of switch 138 to be engaged by projection 134 of lever 112, thereby closing the circuit of solenoid 132 which further raises the inner end of lever 112 and depresses treadle 110 on the opposite end thereof, thus aiding the operator. The timing mechanism of the timer switch 140 will then commence operating and permit the circuit of solenoid 132 to remain closed for a predetermined period of time. Such further movement of lever 112 as referred to immediately hereinabove will also serve to completely raise the table 16 to such an extent that the die 26 will be in full operable relationship with the wheel 56 mounted on the arbor 40 for purposes of depressing the indicia 64 into the rim thereof.

The die 26 and arbor 40 are rotatable for a predetermined period controlled by the setting of the timing switch 140. During this time, the operator will not need to hold the treadle 110 depressed since the solenoid 132 serves this function. Therefore, at the end of the predetermined period of time for which the timing switch 140 has been set, the circuit of solenoid 132 will be opened by the timing switch, and the solenoid 132 will be deenergized to permit the rearward end of lever 112 to be lowered immediately and treadle 110 to raise, thereby opening switch 138 and incidentaly causing finger 116 to open switch 122 to cause the clutch member 152 to be disengaged from clutch member 150, whereby the rotation of the arbor and die will cease. Co-incidentally with this, the free end of the finger 118 will raise and thereby cause the link 126 to move to its lower position and carry the table 16 downward therewith a sufficient extent to separate the die 26 from arbor 40 and wheel 56 supported thereon. Also, when the treadle 110 is raised, as aforesaid, the switch 164 will be actuated in such a way as to cause air instantly to enter the cylinder 144 against the left hand surface of the piston 142 as viewed in Fig. 2 for purposes of contracting the segments 90 of arbor 40 and thereby permitting indicia indented wheel 56 to be removed from the arbor. The arbor will by that time no longer be rotated and it will remain in this condition until another wheel blank is placed upon the arbor for purposes of having indicia impressed into the rim thereof. The cycle described hereinabove will be repeated as soon as the operator again partially depresses treadle 110.

It will also be noted that during the operation of the device, the die 26 and arbor 40 will revolve in opposite rotary directions as indicated by the arrows on the die 26 and wheel 56 illustrated in Fig. 1. In order that the operator may not accidentally be injured or endangered such as by catching a finger between the die and arbor while rotating, a guard 166 is supported by the table 16 so as to extend upward and is shaped to have surfaces closely conforming to the curved surfaces at one side of the arbor and die, as clearly illustrated in Fig. 1. The guard 166 does not interfere, however, with the rotation of the arbor and die or the mounting of wheels 56 on the arbor or removing them therefrom.

While, in the exemplary embodiment illustrated herein, the die 26 has been selected to comprise the male indicia forming member and the arbor has been provided with the female indicia forming recesses which cooperate with the raised indicia 28 of die 26, it is to be understood that the die 26 could be formed with female indicia forming recesses and the arbor 40 could be provided with raised male indicia forming members without departing from the spirit of the invention. Also, while the segments 90 are moved into firm engagement with the inner surface of the rim 54 of wheel 56 to hold the wheel in operative position upon the arbor, it will be readily seen that the impressing or depressing of the indicia 64 into the rim 54 of wheel 56 will in itself serve to temporarily lock the wheel 56 onto the arbor until the segments 90 thereof are contracted to permit removal of the wheel 56 therefrom at the completion of the indicia impressing operation.

It will thus be seen that the present invention provides means for impressing indicia into thin cylindrical surfaces such as the cylindrical rims of register wheels and the like, such impressing of indicia comprising either raising the indicia above the exterior cylindrical surface of the wheels or depressing the same below said exterior surface thereof, depending upon whether the male or female indicia impressing means are positioned on the die 26 or arbor 40 of the device. Means are also provided for suitably indexing the wheel blanks relative to the arbor and at the completion of the indicia impressing operation the arbor is automatically contractible so as to permit the ready removal of the indicia impressed wheels therefrom. The operation of the entire device is mostly automatic and requires very little physical effort on the part of an operator to initiate such automatic operation. The duration of the indicia impressing operation is selectively variable due to the provision of a settable timing switch within the circuit of the device. The entire mechanism is also compact and relatively simple in construction as well as being safe and easy to operate. It is also readily conceivable that the arbor and means for expanding and contracting the same may be suitable for operations other than holding cup-shaped register wheels for purposes of impressing indicia thereinto and the foregoing description is not intended in any way to limit or restrict the uses to which said arbor may be placed.

While the invention has been illustrated and described in its preferred embodiment and has included certain details, it should be understood that the invention is not to be limited to the precise details herein illustrated and described since the same may be carried out in other ways, falling within the scope of the invention as claimed.

I claim as my invention:

1. Mechanism for impressing indicia into a member having a relatively thin cylindrical rim and comprising in combination, a die and an arbor mounted for relative rotation with their outer peripheries adjacent one another and respectively having registering series of male and

female indicia forming means on the outer peripheral surfaces thereof, said arbor having a cavity extending inward from one end and the walls surrounding said cavity being slotted radially to provide a plurality of segments radially expansible and contractible relative to each other and said arbor also being provided with a frusto-conical exterior surface, means for rotating said die and arbor, means for moving the peripheries of said die and arbor into and out of indicia forming relation and upon rotating the same impress indicia into the rim of one of said members when mounted upon said arbor, means disposed in the cavity of said arbor engageable with said walls, and means engageable with said frusto-conical surface, means for moving said last two mentioned means simultaneously longitudinally in the same direction relative to said arbor to expand and contract said arbor to facilitate mounting said member thereon and removing it therefrom.

2. Mechanism for impressing indicia into a member having a relatively thin cylindrical rim and comprising in combination, a die and an arbor mounted for relative rotation with their outer peripheries adjacent one another and respectively having registering series of male and female indicia forming means on the outer peripheral surfaces thereof, said arbor having a cavity extending inward from one end and the walls surrounding said cavity being slotted radially to provide a plurality of segments radially expansible and contractible relative to each other and said arbor also being provided with a frusto-conical exterior surface, means for rotating said die and arbor, means for moving the peripheries of said die and arbor into and out of indicia forming relation and upon rotating the same impress indicia into the rim of one of said members when mounted upon said arbor, a sleeve engageable with said frusto-conical surface of said arbor, a conical member engageable with the walls of said cavity, and means connecting said sleeve and conical member and operable to move the same simultaneously and longitudinally relatively to said arbor to expand and contract the segments of said arbor and facilitate mounting said member thereon and removing it therefrom.

3. Mechanism for impressing indicia into a member having a relatively thin cylindrical rim and comprising in combination, a die and an arbor mounted for relative rotation with their outer peripheries adjacent one another and respectively having registering series of male and female indicia forming means on the outer peripheral surfaces thereof, said arbor having a cavity extending inward from one end and the walls surrounding said cavity being slotted radially to provide a plurality of segments radially expansible and contractible relative to each other and said arbor also being provided with a frusto-conical surface on its exterior, a shaft extending axially through said arbor, means for rotating said die and arbor, means for moving the peripheries of said die and arbor into and out of indicia forming relation and upon rotating the same impress indicia into the rim of one of said members when mounted upon said arbor, a sleeve concentric with said shaft and fixed thereto for simultaneous movement therewith longitudinally of said arbor, said sleeve engaging the frusto-conical surface of said arbor, a conical member fixed to said shaft and engageable with the walls of said cavity in said arbor, and means operable to move said shaft longitudinally of said arbor to expand and contract the segments of said arbor and facilitate mounting said member thereon and removing it therefrom.

4. An arbor for use in impressing indicia into the walls of a cylindrical member and having indicia forming means on its periphery and a cavity extending axially inward from one end, the walls surrounding said cavity being radially slotted to form a plurality of segments and the exterior of said arbor also being partially frusto-conical, a shaft extending axially of said arbor and movable in opposite directions longitudinally thereof, a member having a conical surface sloping in the same direction as said frusto-conical exterior of said arbor and fixed to said shaft, said member being engageable with the walls of said cavity and operable to expand said segments when said shaft is moved longitudinally in one direction, a sleeve fixed to said shaft and engageable with the frusto-conical surface of said arbor and operable to contract said segments when said shaft is moved longitudinally in an opposite direction, and means on said arbor engageable with said cylindrical member to position the same in one rotated position on said arbor relative to said indicia forming means.

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