

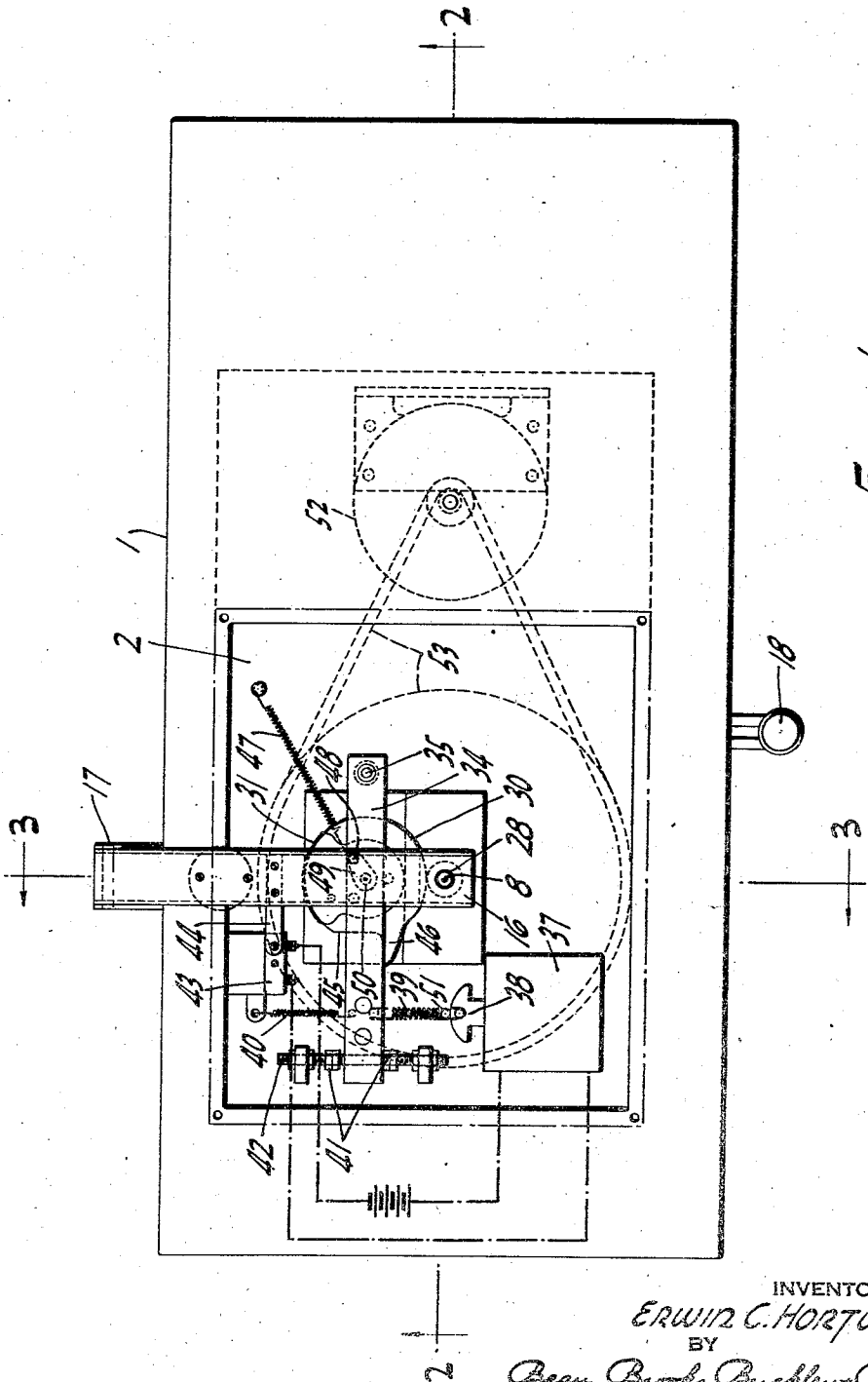
Oct. 1, 1946.

E. C. HORTON
MARKING MACHINE

2,408,516

Filed Nov. 28, 1942

3 Sheets-Sheet 1



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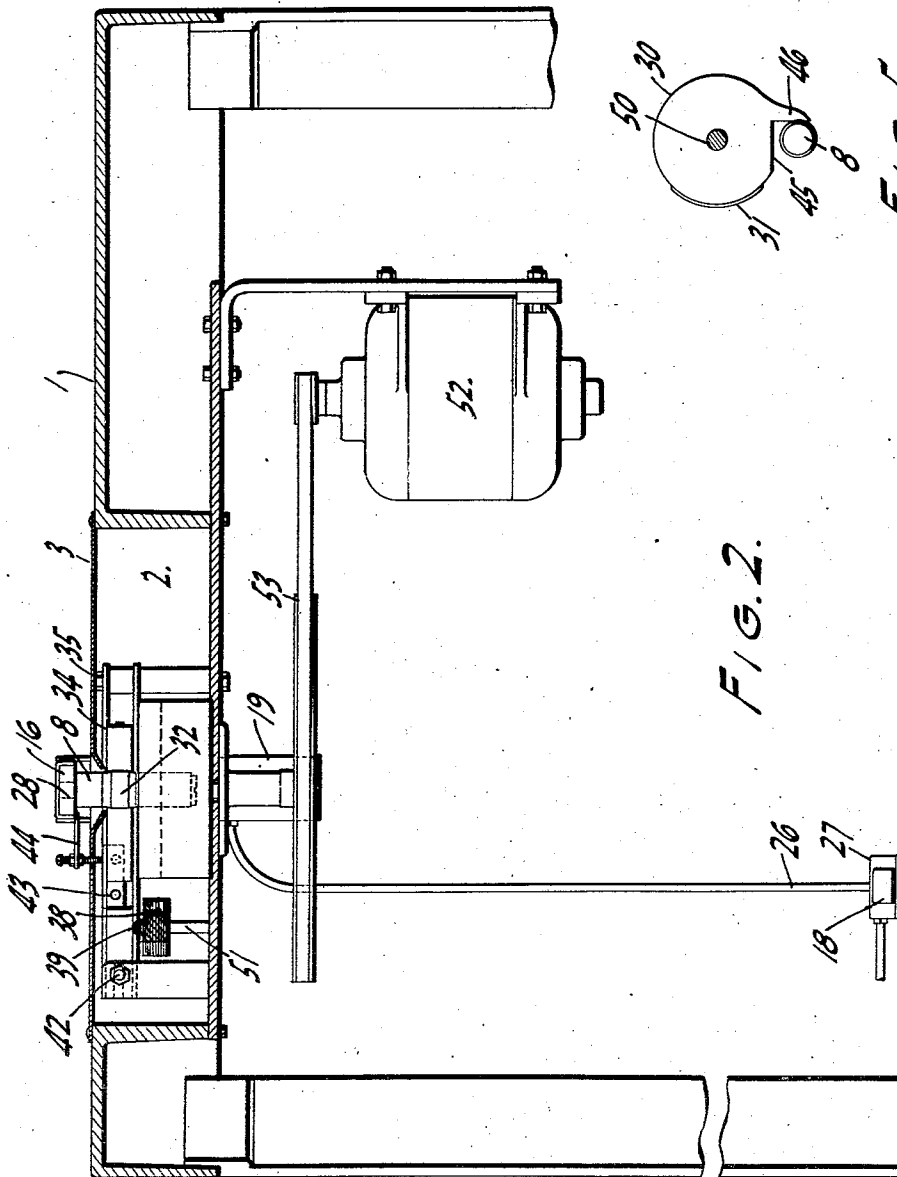


FIG. 2.

FIG. 5.

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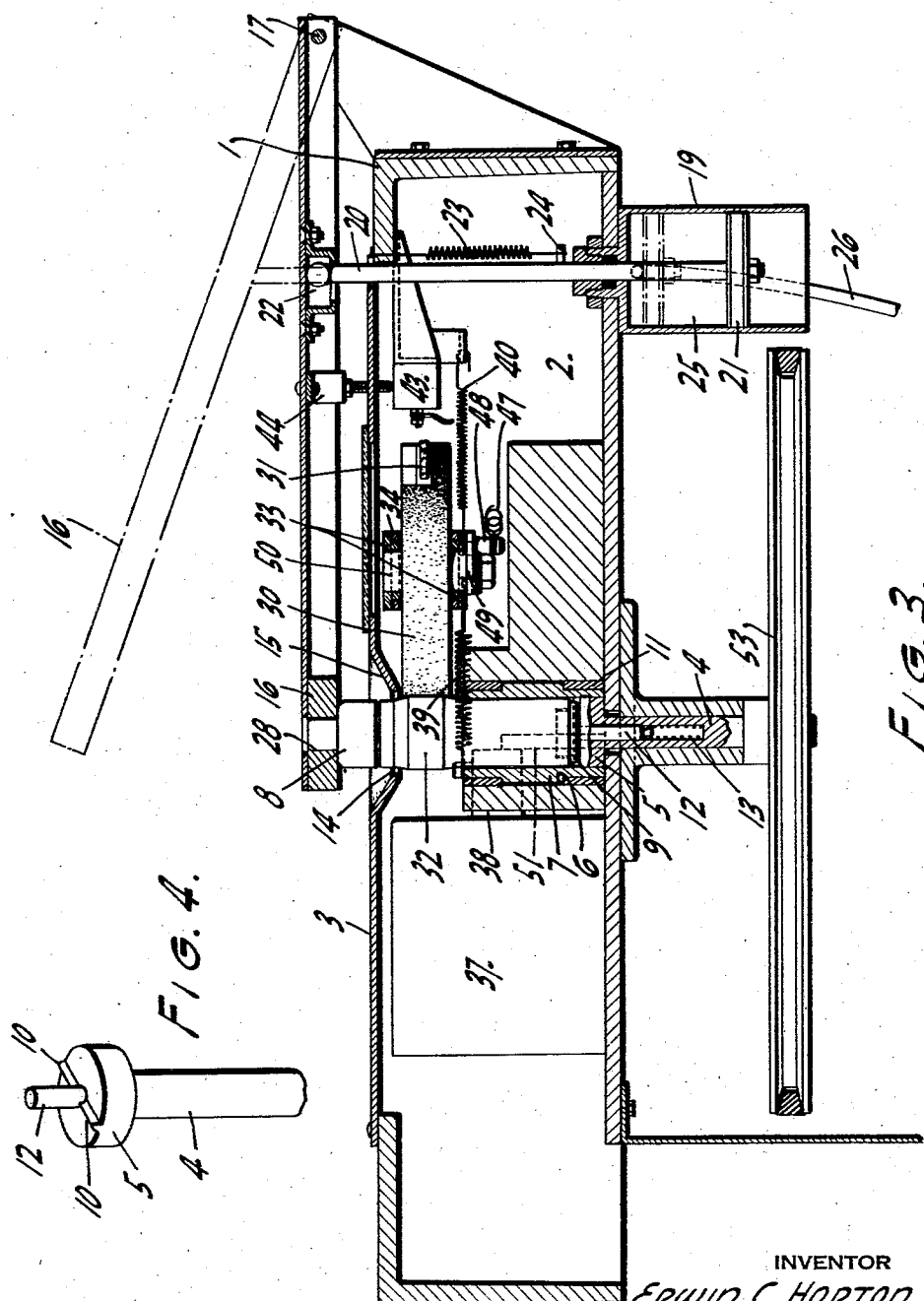
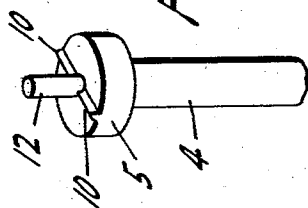


FIG. 3.

FIG. 4.



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2,408,516

MARKING MACHINE

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Application November 28, 1942, Serial No. 467,235

13 Claims. (Cl. 101-7)

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This invention relates to a marking machine and primarily to a machine for marking or printing upon cylindrical objects.

In the formation of certain articles, such as containers, projectiles and the like, the projectile or container body is partly completed in one department or one plant and then turned over to another department for a further operation, or if completed in one department, is delivered to another establishment for filling. For example, in the case of a projectile, the body would be completed in one establishment and delivered to another plant for filling with an explosive charge. To this end it is desirable to have the projectile marked so as to indicate the character of the filling or charge as well as the type of gun the projectile is adapted for.

The object of the present invention is to provide a machine of this character which will be of simple and practical construction and will act efficiently to mark or identify the container or projectile for the purpose intended.

A further object is to provide a machine of this character which will turn together or more securely couple the component parts of the body by and during the process of marking of the same whereby to insure the component parts being given the same uniform securement.

A further object of the invention is to provide an identifying machine in which marking of identification is impressed upon the article by mechanism in which the article serves as a power transmitting member thereby avoiding unnecessary wear and tear on the mechanism. The invention still further has for its object to provide an identifying machine of the above character which will function effectively for the marking of cylindrical articles in rapid succession.

In the accompanying drawings:

Fig. 1 is a top plan view of a machine embodying the present invention, the cover plate having been removed;

Fig. 2 is a longitudinal sectional view through the machine about on line 2-2 of Fig. 1;

Fig. 3 is a transverse sectional view about on line 3-3 of Fig. 1;

Fig. 4 is a detailed perspective view of the work engaging and ejecting member; and

Fig. 5 is a diagrammatic detailed view of the die wheel being arrested by the work piece.

Referring more particularly to the drawings, the numeral 1 designates a table having a mechanism compartment 2 normally closed by a cover plate 3. Journaled for rotation about a vertical axis in the bottom of the compartment is a driv-

ing shaft 4, the upper end of which is provided with a head 5 disposed in the bottom of a work chamber 6. Within this chamber is loosely mounted a sleeve-like holder 7 for free rotation and in which the lower end of the work piece 8, such as a cylindrical container or projectile, is arranged. In the manufacture of a projectile which embodies an explosive holding chamber, the bottom end of the projectile chamber is closed by a screw plug 9, having a kerf to receive a screw driving bit or rib 10, or other shaped clutching face, on the driving head 5. The sleeve gives lateral support to the work piece and may in turn be accorded proper bearing at its upper and lower ends by the journal rings 11. The driving head 5 is formed with an axial bore in which an ejector pin 12 backed by a spring 13 is slidably mounted for the purpose of declutching the work-piece or disposing it out of driving relationship with the head 5 after the identifying operation.

The cover plate 3 is provided with a feed opening 14 in registry with the sleeve 7 and the marginal portion of the plate about the opening 14 may be dish-shaped, as at 15, to facilitate the introduction of the work piece into the machine. After the work piece has been properly placed in the sleeve 7 it is subjected to the pressure of an overlying arm 16 pivotally mounted at 17 on the table and depressed by a treadle 18. Thus the work piece is brought down into clutching engagement with the driving head 5. The treadle may be connected directly to the pressure arm 16 or, as shown in Figs. 2 and 3, by means of an interposed pneumatic motor 19, the rod 20 of the motor piston 21 being pivotally connected to the pressure arm 16 by a suitable coupling 22. A coil spring 23 anchored at one end to the table and connected as at 24 to the piston rod 20 serves to restore the pressure arm to its normally elevated position, as shown in the broken lines in Fig. 3. Air under pressure when admitted to the chamber 25 at the upper side of the piston 21 will move the latter downwardly, and this pressure may be conducted through a conduit 26 and controlled by a treadle controlled valve 27. Release of the foot pressure in the treadle will vent the chamber 25 and permit the spring 23 to lift the pressure arm 16 for manually removing the work piece. The outer end of the pressure arm 16 may be formed with a socket 28 to engage the upper end of the work piece and thereby center the same and also give support thereto while it is being rotated by the head 5.

The identifying marker is in the form of a wheel 30 carrying on its periphery a printing or die section 31 adapted to be rolled in contact with the work piece. In the case of a projectile marking the imprint may be cut into the rifling copper band 32. The marking wheel 30 is journaled in upper and lower bearings 33 of a lever 34 which is mounted for swinging about a vertical axis 35. This disposes the marking wheel for movement toward and from the periphery of the work piece, the wheel being brought into active contact with the latter by suitable means, such as an electromagnet 37 which has its armature 38 connected by a coil spring 39 to the lever for providing a yieldable urge in the marking engagement. When the marking or identifying operation is completed and the electromagnet 37 de-energized, a spring 40 acting in opposition to the spring 39 will restore the lever 34 to its normal position spaced from the work piece, the limits of lever movement toward and from the work piece being determined by adjustable stops 41 threaded on a guide rod 42 for the outer end of the lever. A switch 43 arranged in the circuit for the electromagnet 37 is closed by a finger 44 carried by the pressure arm 16, the arrangement being such that after the pressure arm has been brought to its lowermost position, as determined by the threading in of the closure plug 9, the switch 43 will close to energize the electromagnet and thereby bring the wheel over against the revolving work piece. The periphery of the wheel has a friction contact surface whereby to cause rotation of the wheel when engaged with the revolving work piece, and during this rotation the marking die 31 will roll in contact with the band 32 and cut therein the desired identifying impression.

When the work piece is first placed in the socket of the work holder or sleeve 7 and the arm 16 depressed the driving bit 10 will first find the kerf in the closure plug 9 and then act to screw the plug in more fully if there is any slack. The die wheel is then moved against the work piece for the impression, as shown in Fig. 3. The disposition or location of the die 31 is normally at the far side of the wheel so that the latter will rotate a distance prior to effecting the die cutting impression and by reason of this initial driving contact a drag is imposed upon the revolving work piece which results in the plug 9 being secured more firmly. In other words, this initial driving contact with the wheel insures the plug being threaded to its seat, should it have previously stopped short thereof during the preliminary threading action prior to bringing the die wheel over against the work. After the identification has been impressed upon the revolving work piece the driving relationship between the latter and the marking wheel is broken herein by the work piece rotating off into the space provided by a chordal face 45 interrupting the periphery of the wheel, the rotational free movement of the wheel being finally determined by a projecting stop lug 46 striking against the work piece as shown more clearly in Fig. 5. Thereafter the pressure arm 16 is released and the work piece is ejected by the pin 12 and removed from its chamber whereupon the identifying wheel is free to return to its normal position ready for the succeeding operation. This automatic restoration is accomplished herein by means of a light coil spring 47 anchored at one end and having its opposite end connected to a crank pin 48 on an arm 49 carried by the shaft 50 of the identifying

ing wheel. The spring is connected to the crank pin outwardly beyond the end of the shaft 50 for the spring to clear the same as the wheel makes a complete rotation. It will be obvious that after the spring 47 in its distended position has moved across the dead center position, the spring force will act to continue the rotation of the wheel in the direction of rotation imparted by the revolving work piece until the wheel reaches its free normal position ready for the next operation shown in Fig. 1.

From the foregoing it will be observed that the work piece itself forms a part of the drive mechanism for the identifying wheel; that subsequent to the establishment of the driving relationship but prior to the act of imparting the mark of identification each work piece is subjected to an increased torque for insuring the securement of the plug 9 to the desired and uniform extent; that subsequent to the impression made on the band 32 the driving relationship is broken automatically and the wheel arrested by the stop lug 46 to avoid the making of repeated impressions on the same work piece. Therefore even though the work piece continues to rotate, no harmful effect will result because the inner stop nut 41 acts to prevent the chordal face being pulled over into contact with the work piece. The yielding pressure for making the identifying impression on the band 32 is determined by the spring 39, and to avoid this spring displacing the armature 38 from its field a stop pin 51 is provided beyond the normal path of the armature. The driving head 5 and its supporting shaft 4 may be actuated in any suitable manner, such as by the electric motor 52 through a belt and pulley transmission 53.

The foregoing description has been given in detail for the sake of clearness and is merely illustrative of the inventive principles involved which may be incorporated in other physical embodiments without departing from the scope and spirit of the invention claimed.

What is claimed is:

1. An identifying machine comprising a marking wheel, a journal support for the wheel, the latter having a portion of its periphery provided with a marking symbol, a rotating work holder arranged to support and rotate a work piece adjacent the periphery of the wheel, means for rotating the work holder, means for bringing the periphery of the wheel and the revolving work piece into driving relationship whereby the work piece will serve to rotate the wheel, and means operable to place the workpiece in the holder for being rotated by the latter and concurrently to render said bringing means operative.

2. An identifying machine comprising a marking wheel, means providing journal support for the wheel, the latter bearing a marking device on its periphery, a rotary work holder having a socket to receive one end of a work piece for supporting the same adjacent the periphery of the wheel, means for rotating the work holder, a movable support for the wheel operable to bring the periphery of the latter into driving engagement with the revolving work piece whereby the work piece will serve to rotate the wheel for rolling the device on the piece, a member removably engaging the projecting opposite end of the work piece to provide journal support therefor during the rolling operation, and means operable by and during the operative placement of said member on the workpiece for so moving said movable support.

3. An identifying machine comprising a mark-

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ing wheel, means providing journal support for the wheel, the latter bearing a marking device on its periphery, a rotary work holder having a socket to receive one end of a work piece for supporting the same adjacent the periphery of the wheel, constantly rotating means arranged in the bottom of the socket for rotating the work holder, means for bringing the periphery of the wheel and the revolving work piece into driving relationship whereby the work piece will serve to rotate the wheel for rolling the device on the piece, a pressure member removably engaging the opposite end of the work piece to move the latter into driving engagement with the rotary means, and means for ejecting the work piece from driving engagement with said rotating means upon removal of the pressure member.

4. An identifying machine comprising a marking wheel, means providing journal support for the wheel, the latter bearing a marking device on its periphery, a rotary work holder having a socket to receive one end of a work piece for supporting the same adjacent the periphery of the wheel, means arranged in the socket for constantly rotating the work holder, means for bringing the periphery of the wheel and the revolving work piece into driving relationship whereby the work piece will serve to rotate the wheel for rolling the device on the piece, a spring actuated ejector arranged in the holder socket for normally holding the workpiece out of driving engagement with said constantly rotating means, and a pivotally mounted pressure arm arranged above the work piece to press the latter down into the socket against the action of the ejector to effect such driving engagement with said constantly rotating means.

5. An identifying machine comprising a marking wheel, means providing journal support for the wheel, the latter bearing a marking device on its periphery, a rotary work holder having a socket to receive one end of a work piece for supporting the same adjacent the periphery of the wheel, a driving clutch member constituting the bottom of the socket and adapted to engage the workpiece to rotate the latter, means for bringing the periphery of the wheel and the revolving work piece into driving relationship whereby the piece will serve to rotate the wheel for rolling the device on the piece, a spring actuated ejector acting normally to hold the workpiece out of operative engagement with the clutch member, and a pressure member arranged to press the workpiece down into the socket against the action of the ejector to operatively engage the clutch member.

6. An identification machine comprising a wheel bearing a peripheral marking device, a rotary holder arranged to engage a work piece at one end and to support the side of the work piece adjacent the periphery of the wheel, means for rotating the holder, a movable journal support for the wheel by which its periphery may be brought into contact with the revolving work piece to be driven thereby for rolling the marking device thereon, movable centering means for engaging the opposite end of the work piece to give support thereto and position the same for the rolling action, and means operable by the centering means for so moving the journal support.

7. An identification machine comprising a wheel bearing a peripheral marking device, a rotary holder arranged to engage a work piece

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at one end and to support the side of the work piece adjacent the periphery of the wheel, means for rotating the holder, a movable journal support for the wheel by which its periphery may be brought into contact with the revolving work piece to be driven thereby for rolling the marking device thereon, movable centering means for engaging the opposite end of the work piece to give support thereto and position the same for the rolling action, an electromagnet operable to so move the journal support, and a switch in electrical circuit with the electromagnet, said switch being closed by and during movement of the centering means to its operative position.

8. An identification machine comprising a wheel bearing a peripheral marking device, a rotary holder arranged to engage a work piece at one end and to support the side of the work piece adjacent the periphery of the wheel, means for rotating the holder, a movable journal support for the wheel by which its periphery may be brought into contact with the revolving work piece to be driven thereby for rolling the marking device thereon, movable centering means for engaging the opposite end of the work piece to give support thereto and position the same for the rolling action, means acting resiliently on the journal support to so adjust the same for yieldably pressing the marking device against the work piece, the periphery of the wheel adjacent the end of the marking device being cut away to interrupt the driving action of the work piece on the wheel, and means for limiting the movement of the journal support under the urge of the resilient means toward the work piece after the latter rides off the periphery into such cut.

9. An identification machine comprising a wheel bearing a peripheral marking device, a rotary holder having a socket with a bottom wall formed with a clutch face by which an end of a work piece is operatively connected to the holder for being rotated thereby, a spring actuated ejector pin slidable in the bottom wall and acting normally to lift the work piece out of clutched relationship with the holder, a pressure means operable to press the work piece into clutching engagement with the bottom wall face against the urge of the ejector pin, said pressure means providing lateral support for the work piece while the marking device is rolled thereon, means supporting the work holder and the wheel for relative movement by which the latter may have its periphery brought into driving contact with the work piece, and means coacting with the pressure means and the supporting means for operating one by and during the operation of the other of the last two named means.

10. An identification machine comprising a wheel bearing a peripheral marking device, a rotary holder arranged to engage a work piece at one end and to support the side of the work piece adjacent the periphery of the wheel, means for rotating the holder, a movable journal support for the wheel by which its periphery may be brought into contact with the revolving work piece to be driven thereby for rolling the marking device thereon, the periphery of the wheel being cut away whereby subsequent to the rolling operation the driving relation between the wheel and work piece will be broken, a crank pin rotatable with the wheel, and a spring anchored at one end and connected at its other end to the crank pin for being tensioned by the rotation of the wheel and to subsequently restore the wheel to its normal position when the driving relation is broken.

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11. An identifying machine comprising a marking wheel bearing a marking device on its periphery, means providing journal support for the wheel, a work holder supporting a workpiece at one end, rotating drive means operable to rotate the supported workpiece when the latter is moved into driving engagement therewith, means for positioning the periphery of the wheel and the revolving workpiece in driving contact with each other, a pressure member removably engaging the opposite end of the workpiece to move the latter into driving engagement with the rotating drive means, and means operable by said pressure member to effect operation of said positioning means.

12. An identifying machine comprising a marking wheel bearing a marking device on its periphery, means providing journal support for the wheel, a work holder supporting a workpiece at one end, rotating drive means operable to rotate the supported workpiece when the latter is moved into driving engagement therewith, means for positioning the periphery of the wheel and the revolving workpiece in driving contact with each other, a pressure member removably engaging the opposite end of the workpiece to move the latter into driving engagement with the rotating

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drive means, said positioning means including an electro-magnet in circuit with a switch adapted to be closed by said pressure member when the workpiece has been moved into such driving engagement, and means for actuating the pressure member.

13. An identifying machine comprising a marking wheel bearing a marking device on its periphery, means providing journal support for the wheel, a work holder supporting a workpiece at one end, rotating drive means operable to rotate the supported workpiece when the latter is moved into driving engagement therewith, means for positioning the periphery of the wheel and the revolving workpiece in driving contact with each other, a pressure member removably engaging the opposite end of the workpiece to move the latter into driving engagement with the rotating drive means, said positioning means including an electro-magnet in circuit with a switch adapted to be closed by said pressure member when the workpiece has been moved into such driving engagement, resilient means connecting the electro-magnet to the wheel supporting means, and pneumatic means operable to actuate said pressure member.

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