after said shaft has been released by the tumblers for axial movement.

A knob, 45, is riveted to the outer end of the shaft for conveniently rotating the same; the underside of said knob is recessed at 46 to permit the knob to be telescoped over the bearing, 4, of the cover, when the shaft is axially moved into unlocking position, as shown in Figure 2, providing a compact arrangement. A notch, 47, is provided in the periphery of the knob for registration with the node, 32, as an initial or neutral position. Preferably the notch is radially alingned with the key, 9, and dog, 10, so that the relative positions thereof may be readily ascertained. The exposed surface of the cover may be provided with suitable graduations, and for convenience, a series of equally spaced projections, 48, are formed on said cover, positioned to correspond to the number of units of rotation provided for by the ratchet wheel, 17, and spring pawl, 20, assisting in the rotation of the shaft to exact positions when it is either light or dark. The number of projections, 48, including the node, 32, may be the same as the number of clicks of the wheel or teeth of the same, but are herein shown as five projections and the node, 32, so that the distance between these points corresponds to two clicks of the pawl and ratchet or one-sixth of a revolution of the shaft.

The opening, 51, in a wooden door, 52, or other mounting member need be only large enough to permit a sliding fit of the casing, 1. The front end of the lock is supported in a recessed bearing ring, 53, and the rear end of the lock is secured to a mounting plate, 54, by three screws, 55, spaced between the legs, 35, of the tumbler plate, 26. The height of the bearing ring may be varied to suit the thickness of the door. The mounting plate, 54, is secured at its marginal edges to the door by means of wood screws, 56.

It will of course be understood that the position of the lugs on the tumblers relative to their keyways determines the combination of the lock. These lugs which are positioned on the tumblers at points radially aligned with the teeth of the ratchet, may be positioned at any of the points other than the point supplanted by the keyway, and so may the position of the notch, 31, be interchanged with any of the notches, 30. Thus, the possible number of different combinations that may be had is relatively great.

The lock may be made for manipulation by commencing the rotation of the parts in either direction; for example the operation may be as follows: The knob, 45, is positioned with its notch, 47, aligned with the node, 32; then rotating to the right three complete turns to insure that the tumblers, 11, 12 and 13, are in driving engagement with the shaft, which results from the dog, 10, on the shaft engaging the lug, 11^a, causing the lug, 11^b, to drive the lug, 12^a, and the lug, 12^b, to engage the lug, 13^a, to rotate the respective tumblers. The shaft is now rotated in the same direction to a predetermined position at which the keyway of the tumbler, 13, is aligned with the notch, 31, in the tumbler plate, 26. The shaft is then reversed in rotation through two complete turns to the left, and the necessary portion of a third turn to align the notch, 47, with the node, 32, (the tumbler, 13, remaining in a fixed position) and a continued turn in the same direction is made to a predetermined point at which the keyway of the tumbler, 12, is aligned with the keyway of the tumbler, 13, and notch, 31, in the plate, 26. The shaft is then rotated to the right one complete turn and the additional portion of another turn to align the notch, 47, with the node, 32, (tumblers, 12 and 13 both remaining stationary) and continued turning to the right brings the parts to a predetermined position in which the keyway of the tumbler, 11, is aligned with keyways of tumblers, 12 and 13, and notch, 31. Then with the three tumblers, 11, 12 and 13 properly aligned and fixed, the shaft is reversed and rotated to the left to a predetermined position, at which position the key, 9, and the dog, 10, are in line with the ways, 14, of the tumblers and notch, 31, of the plate, 26, so that the shaft may be pushed inwardly, the key, 9, passing through the ways, 14, of the tumblers, 11, 12 and 13, and the dog, 10, passing through the notch, 31, permitting the slot, 6, in the end of the shaft to engage the operating bar, 7; then by an additional slight turn of the knob, the night latch, 8, may be released.

If desired, the lock may be maintained in open position against the reaction of the spring, 40, by permitting the upper end of the dog, 10, to frictionally engage the underside of the plate, 26. The mechanism may be thrown into locking position by turning the knob until the key and dog are aligned for withdrawing rearwardly through their respective ways and notch, then a slight turn of the shaft by the knob in either direction will destroy the setting of the tumblers.

If will now be clear that if the first three parts of the combination are known, by which the ways of the tumblers, 11, 12 and 13 may be aligned, an attempt to push the shaft inwardly will be partially permitted by the auxiliary lug, 10^b, extending into one of the notches, 30, but further movement of the shaft is prevented by the shoulder, 10^a, abutting against the top of the plate, 26. This will of course for an instant cause the manipulator to believe that the setting of the tumblers is completed, which mistake is readily noted at the attempt to turn the knob. A further attempt to locate the set-

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STARTING CRANK HOLE CLOSURE

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This invention relates to a device for closing the opening in the lower portion of the radiator through which the hand starting crank may be inserted, and at the same time closing an opening in the forward end of the engine through which the starting crank also passes. Since there is apt to be considerable variation in the distance between the radiator and the engine, due to manufacturing and assembly errors, it would not be feasible to use a non-yieldable cap to close both openings.

An object of the invention, therefore, is to provide a closure assembly comprising two sections, movable relative to each other to compensate for variations in the distance between the front of the engine and the radiator on different cars. One of these sections closes the opening in the forward end of the engine and the other the opening in the lower portion of the radiator. These sections are so connected together that they may be inserted or removed as a unit.

Other objects and advantages will be apparent upon referring to the specification and accompanying drawings, in which:

Fig. 1 is a fragmentary vertical longitudinal section.

Fig. 2 is a detail perspective view of the closure showing some of the various parts disassembled from each other.

Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Fig. 4 is a detail sectional view of that part of the radiator assembly to which the closure is secured.

The numeral 10 indicates an internal combustion engine provided with the usual crankshaft 12. In case of failure of the electrical starting apparatus, some means must be provided to crank the engine by hand. Accordingly a starting crank jaw 14 is threaded onto the forward end of the crankshaft 12. In order to prevent leakage of oil from the engine and also to prevent dirt from getting in, a seal is provided at this point. This seal comprises a piece of felt 16 which is held between stampings 18 and 20, the latter being pressed in an aperture in the timing gear compartment cover 22. An oil slinger 24 is secured to the crankshaft to assist in preventing the escape of oil at this point.

The timing gear compartment cover 22 extends forwardly of the engine and serves as the front support for the latter, being fastened to the frame cross member 26 by means of the bracket 28. An aperture 30 is provided in the forward end of this cover to permit the insertion of the starting crank.

Located in front of the engine is the radiator 32, comprised of the core portion 34 and a lower tank 36. The radiator core extends down to the top of the tank 36, but to improve the appearance of the radiator, an imitation radiator core 38 extends down below the core 34 and in front of the tank 36, concealing the latter and increasing the apparent height of the radiator. This imitation core is formed from a stamping which is perforated and bent to simulate the appearance of the regular core 34.

Due to the location of the tank 36 and the imitation core 38, it is necessary to provide an opening for the starting crank to pass through. Accordingly a tube 40 is secured in the tank 36. An opening of approximately the same diameter as the tube 40 is provided in the imitation radiator core 38.

In order to close the opening in the imitation core 38 and also the aperture 30 in the forward end of the cover 22, I have devised my improved closure. This consists of a knurled cap 46 which is spun over a cup-shaped member 48 as at 50. Riveted to the cup-shaped member 48 is an outer sleeve 52 which is cylindrical in shape and which has slots 54 formed in it. A spring member 56 is also riveted to the cup-shaped member 48 and the outer sleeve 52, and has arms 58 which pass through the slots 54 and engage cam-shaped members 60 which are formed on a collar 61 which is secured in a depression formed in the front side of the tank 36. This is the usual bayonet type of connection and it will be obvious that as the cap assembly is twisted the arms 58 will ride up on the cam-shaped portions 60 and will serve to hold the cap tightly in place.

It is essential that the aperture 30 in the

with but movable relative to the first closure, and spring means adapted to force said resilient material against the other member for the purpose of closing the aperture in said other member.

7. A closure organization comprising, in combination, a member having an aperture formed therein, a second member located adjacent said first member and having an aperture formed therein, a closure adapted to be secured to one of said members to close the aperture therein, a second closure including a piece of resilient material associated with but movable relative to the first closure, spring means adapted to force said resilient material against the other member for the purpose of closing the aperture in said other member, and means to limit movement of the second closure relative to the first when said closures are removed from the apertures in the members.

8. A closure organization comprising, in combination, a member having an aperture formed therein, a second member located adjacent said first member and having an aperture formed therein, a closure adapted to be secured to one of said members to close the aperture therein, a second closure connected to but movable axially with respect to the first closure and adapted to close the aperture in the other member, spring means tending to move said second closure away from the first for the purpose of holding it tightly against the member against which it abuts, and means adapted to limit the movement of the second closure away from the first when the closures are removed from the apertures in the members.

9. A closure organization comprising, in combination, a member having an aperture formed therein, a second member located adjacent the first member and having an aperture formed therein, a closure adapted to be secured to one of said members to close the aperture therein, a sleeve carried by said closure, a second closure having portions adapted to be mounted in telescopic relation to said sleeve, means for urging said second closure away from the first closure and against the other member whereby the aperture in the latter will be closed, and means associated with the sleeve and the portions on the second closure adapted to limit movement of the second closure away from the first when the closures are removed from the apertures in the members.

10. In combination, with apparatus having spaced inner and outer members provided with substantially aligned openings to be closed, opposed cam portions carried by said outer member and associated with the opening therethrough, and a closure structure for said openings, said structure including a body member, a locking member secured thereto and adapted for detachable locking connection with the cam portions associated with the opening of said outer member, a closure device for the opening of said inner member carried by said body member and adjustable toward and from the latter, and a spring interposed between said closure device and said locking member and normally maintaining said closure device in its most remote portion of adjustment relative to said body member.

11. In combination, means having a pair of spaced, substantially aligned openings to be closed, opposed cam portions carried by said means and associated with one of said openings, and a closure structure for said openings, said structure including a body member, a locking member secured thereto and adapted for detachable locking connection with the cam portions associated with said one opening, a closure device for said other opening having a pair of opposed arms adjustably connected to said body member, and means for normally maintaining said closure device in its most remote position of adjustment relative to said body member.

12. In combination with apparatus having spaced inner and outer members provided with substantially aligned openings to be closed, a closure member for each of said openings, means connecting said closure members and permitting the spacing therebetween to be varied, means for releasably locking one of said closure members in position to close the opening of said outer member, and spring means for pressing the other of said closure members into position to close the opening of said inner member.

In testimony whereof I affix my signature.

HARRY S. GOLDEN.