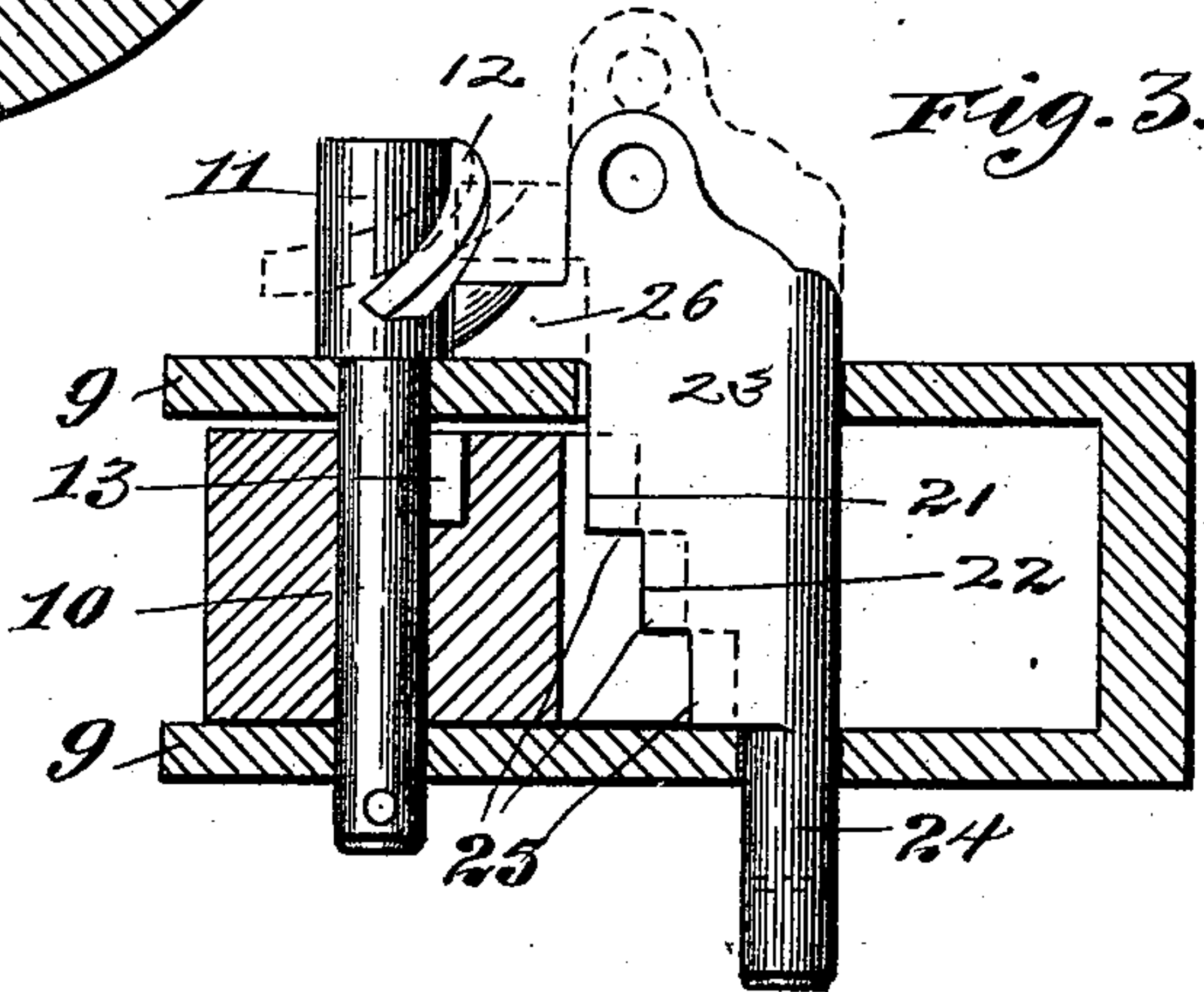
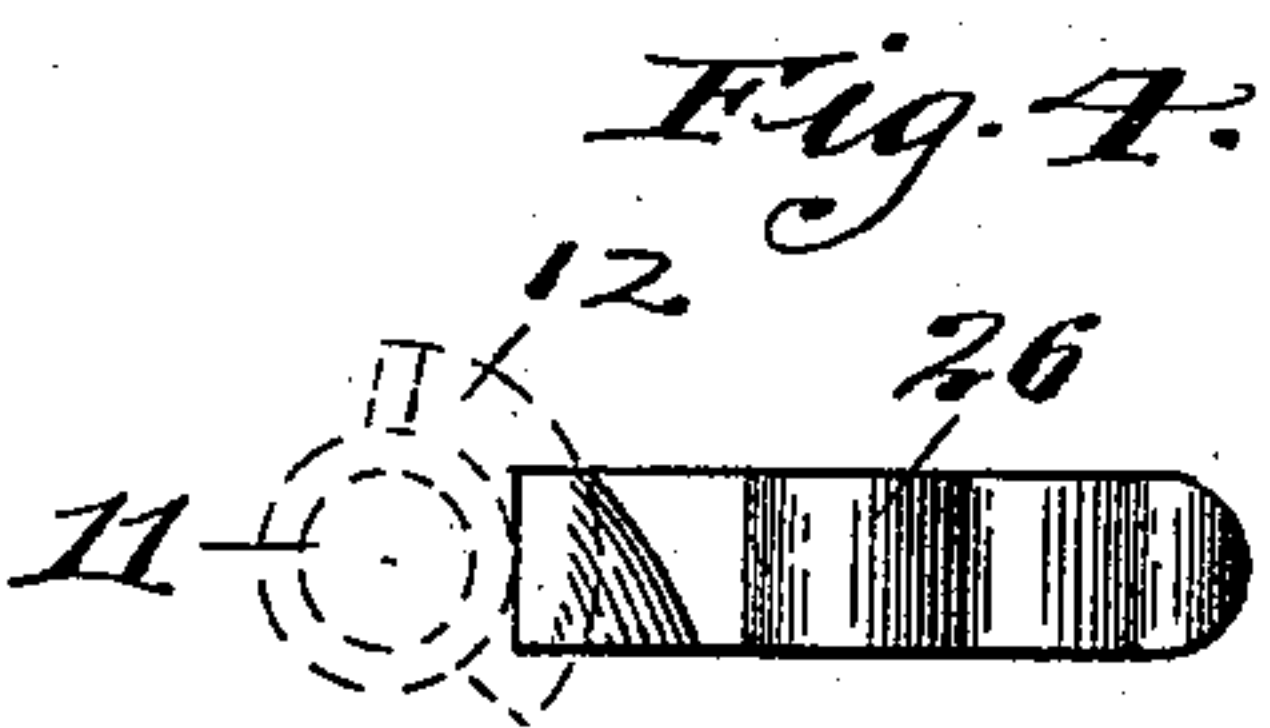
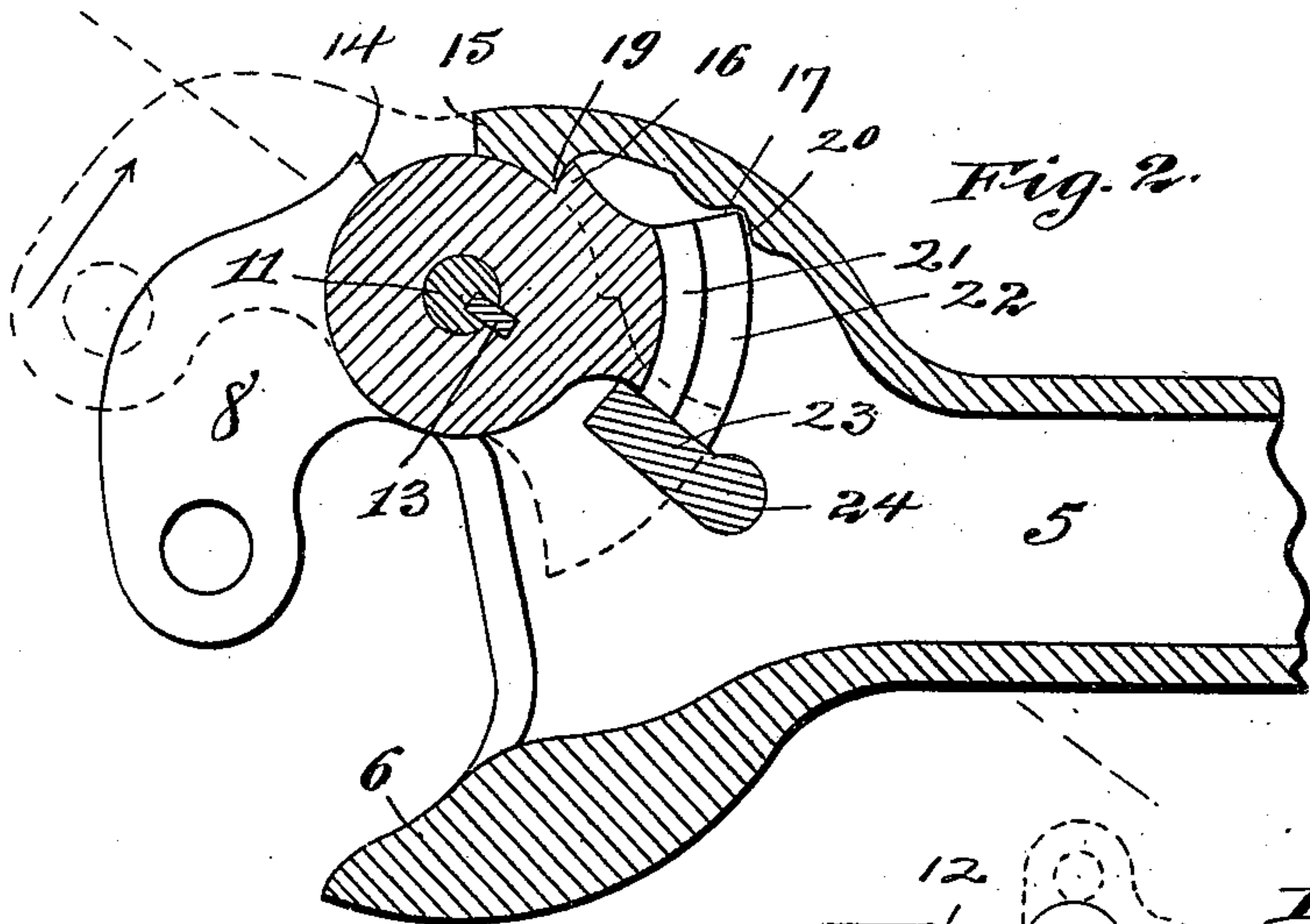
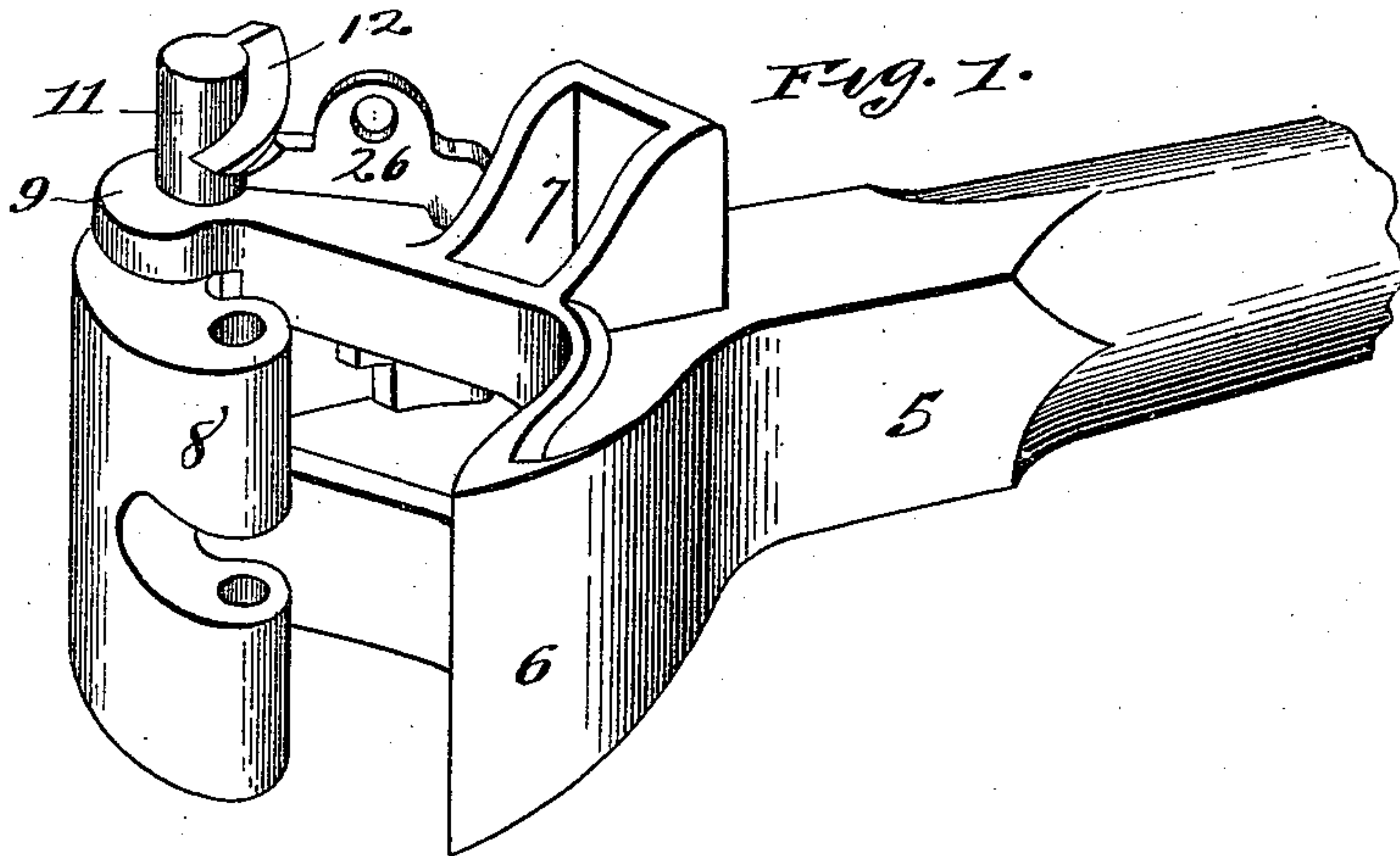


(No Model.)

H. C. SWAN.
CAR COUPLING.

No. 516,881.

Patented Mar. 20, 1894.



Witnesses,
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UNITED STATES PATENT OFFICE.

HENRY C. SWAN, OF OSHKOSH, WISCONSIN.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 516,881, dated March 20, 1894.

Application filed April 15, 1893. Serial No. 470,404. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SWAN, of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

This invention relates to certain improvements in car couplers and more particularly to an automatic car coupler of that class having a pivoted knuckle; and the object of the invention is to make a car coupler of this type which shall have the requisite strength to adapt it for all of the exigencies of service and in which the knuckle may be either automatically or manually opened to the desired extent in order that subsequent automatic coupling may be effected with certainty and without the liability of breaking any of the parts.

To this end my invention comprises a recessed head having a knuckle adapted to swing in the recess thereof around a vertical axis, and the knuckle pivot pin being adapted to operatively engage or be engaged by a cooperating part, whereby after the knuckle locking pin has been raised so as to unlock the knuckle the further movement of the latter either manually or under the separating action caused by moving one of the cars will cause the knuckle to be swung open far enough to permit automatic recoupling.

In the preferred construction I provide the knuckle pin with a cam and the knuckle locking pin with a reversely corresponding cam in order that when the knuckle locking pin is raised so as to unlock the knuckle these cams are brought into operative contact, and the further movement of the lock pin will result in the knuckle being swung on its pivot to the open position. At this point the locking pin is allowed to drop back and rest on the steps of the knuckle. Then when the coupler is brought into contact with another coupler, the knuckle is closed and the lock pin will drop by gravity and lock the knuckle. Certain of the structural features of the head and knuckle are also new, and these as well as the principal invention will be further hereinafter described and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is

a perspective view of a coupler head with the knuckle in the closed position. Fig. 2 is a sectional plan view with the parts in the same position, the open position of the knuckle being indicated by dotted lines. Fig. 3 is a vertical sectional view, the knuckle pivot pin and knuckle locking pin showing in elevation and the dotted lines showing a secondary position of the pins. Fig. 4 is a top or plan view of the locking pin, the knuckle pivot pin and its cam showing in dotted lines.

In the drawings, 5 represents the draw head which is of standard construction, being recessed from its front face and provided with the usual jaw 6 and with the vertical pin opening 7.

8 represents the knuckle, the outlines of which are clearly shown in Fig. 2. Said knuckle is pivoted between the perforated bifurcations 9 of the draw head.

10 represents the knuckle pivot pin, its body cylindrical in its main portion and has the offset or shoulder 11 which rides on the upper surface of the upper one of the perforated lugs 9. The head of the pin or the portion above the shoulder as shown is provided with the integral cam flange or rib 12, which will be of any suitable pitch so that the swinging of the knuckle with the lower side of said cam in contact with a corresponding cam will effect the opening of the knuckle to the position shown by the dotted lines in Fig. 2. The reduced portion of the knuckle pin is provided with a key or lug 13 which engages a recess or key seat in the knuckle, said recess intersecting the opening of the knuckle which receives the pin. The pin is thus engaged with the knuckle so that the rotation of the pin will correspondingly affect the knuckle. The outer or rear side of the knuckle is provided with the shoulder 14 which engages a shoulder 15 of the head, which thus forms an abutment or stop to limit the outward movement of the knuckle. Upon the same face of the knuckle, toward its heel, there are provided also the shoulders 16, 17 which likewise engage shoulders or abutments 19, 20 of the head, the former serving to limit the inner or closing movement of the knuckle and the latter furnishing a bearing which relieves the knuckle pin of part of the shock in buffing. The rear end of the knuckle

is provided with one or more steps 21, 22, and I preferably make the rear end of the knuckle of wedged or flaring shape in horizontal section, as shown in Fig. 2, so that its inner vertical side shall be disposed obliquely to the line of strain when the coupler is closed.

23 represents the knuckle locking pin, the form of which is best shown in Fig. 3. The main portion of the body of the knuckle locking pin is rectangular but may be rounded at its rear edge as shown at 24. (Figs. 2 and 4.) Its front edge is provided with two or more steps 25, the lower one forming a shoulder, which when the coupling pin is in its closed position will rest upon the upper surface of the bottom wall of the coupler head. The lower end of the pin as shown is cylindrical, but it may be of other form, and it passes through a corresponding aperture in the bottom wall or floor of the head, the aperture in the top wall corresponding in cross section to the shape of the upper portion of the pin. The front edge of the upper end of the pin is provided with an angular projecting cam faced lug 26 which will be adapted, when the pin is raised, to engage the lower surface of the cam on the knuckle pivot pin as seen in Fig. 3. When the knuckle locking pin is in the position shown in Fig. 1 and by the full lines in Fig. 2, the knuckle will be locked, the steps of the locking pin engaging the front oblique face of the heel of the knuckle. By dividing the front edge of the pin into a series of steps, a large bearing surface between the lock pin and the knuckle can be secured without necessitating an undue vertical movement of the lock pin to release the knuckle. When the locking pin is raised so that its steps clear the heel of the knuckle, the cam surface of the lock pin comes in contact with the cam surface of the knuckle pin, and a further vertical movement of the lock pin causes the knuckle pin to rotate, carrying with it the knuckle until it reaches an open position. The lock pin then drops back to a rest on the steps of the heel of the knuckle ready to drop into a locked position when the knuckle is again closed. The open position is clearly shown in Fig. 2. From it it will be seen that when the knuckle is open to its widest extent the lock pin is still maintained in its elevated position, riding on the steps of the knuckle, but when the knuckle is swung into the closed position the pin will drop down in front of its heel, the contacting surfaces of the pin and front face of the knuckle being then in a line oblique to the line of strain.

From the above described construction it will be seen that I have provided for limiting the swinging of the knuckle by the engaging shoulders or stops. It will be further seen that said stops or abutments will also relieve to some extent the shock or strain upon the knuckle pin when it is in the coupled position.

A distinct advantage is secured by applying one of the actuating cam members to the

knuckle pin, the opening movement being obviously much shorter than would be required to open a knuckle having its heel provided with a cam co-operating with the lock pin. The disposition of the vertical contacting surfaces of the lock pin and knuckle is advantageous for the reason that the heel of the knuckle is hooked so that a greater extent of bearing surface is secured and its retention insured. The provision of a plurality of steps upon the rear end of the knuckle and the front edge of the pin is advantageous because of the greater bearing surface thus obtained with a relatively small amount of vertical movement necessary to unlock the knuckle. The provision of the flared or wedged shaped knuckle heel is desirable for the reasons before stated, and also in order that the lock pin may be maintained in its elevated position when the knuckle is open.

Obviously some of the structural details might be changed. The cam on the pin might be formed separately, or instead of a projecting cam, rib or flange the head of the pin might be provided with a cam slot and the cam of the lock pin traverses said slot; or the cam which operates in conjunction with the knuckle pin might be formed on the head itself instead of on the lock pin. The construction shown is preferable for the reason that when the knuckle is in the locked position, the cam surfaces are not in contact, the raising of the lock pin to the position of release being sufficient to bring them into operative contact.

So far as I am aware the provision of the knuckle pin with a cam member is broadly new, and therefore I do not limit my invention to the precise details of construction in this regard.

I claim—

1. In an automatic car coupler of the class described, the combination with a pivoted knuckle, of a knuckle pin secured to and turning with the knuckle and said knuckle pin having a cam member thereon, substantially as described.

2. In an automatic car coupler of the class described, the combination with a pivoted knuckle, of a knuckle pin secured to the knuckle and turning therewith, said knuckle pin having a cam member thereon, and a second cam member carried by a non-rotating part of the coupler and adapted to engage the cam member of the knuckle pin to effect its opening, substantially as described.

3. In an automatic car coupler, the combination with the coupler head of a pivoted knuckle, a knuckle pin forming the pivot of the knuckle and secured to turn therewith, a cam flange on the head of the knuckle pin, and a locking pin having a cam member adapted to co-operate with the knuckle pin cam, substantially as described.

4. In an automatic car coupler, the combination with a recessed coupler head having a shoulder or abutment therein, of a pivoted knuckle having a shoulder adapted to engage

that of the head, said shoulders serving as a stop to limit the movement of the knuckle and a knuckle pin secured to and turning with the knuckle and having a cam thereon, 5 substantially as described.

5. In a car coupler of the class described, the combination with the head, of a pivoted knuckle having its heel flared and provided on its rear edge with a step or steps, of a lock 10 pin having a step adapted to ride on the step of the knuckle when the pin is raised, and the knuckle pin having a cam thereon adapted to be engaged by the lock pin in its upward

movement whereby the knuckle is moved on its pivot, substantially as described. 15

6. In car couplers of the class described a knuckle having a pivot pin provided with a cam member, and a locking pin which by a vertical movement will successively release the knuckle and rotate the knuckle pivot pin, 20 said pivot pin being adapted to carry the knuckle with it, substantially as described.

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Witnesses:

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