(No Model.) 2 Sheets—Sheet 1.

W. B. TURNER.

REVERSIBLE RATCHET CLUTCH MECHANISM.

No. 386,044. Patented July 10, 1888.

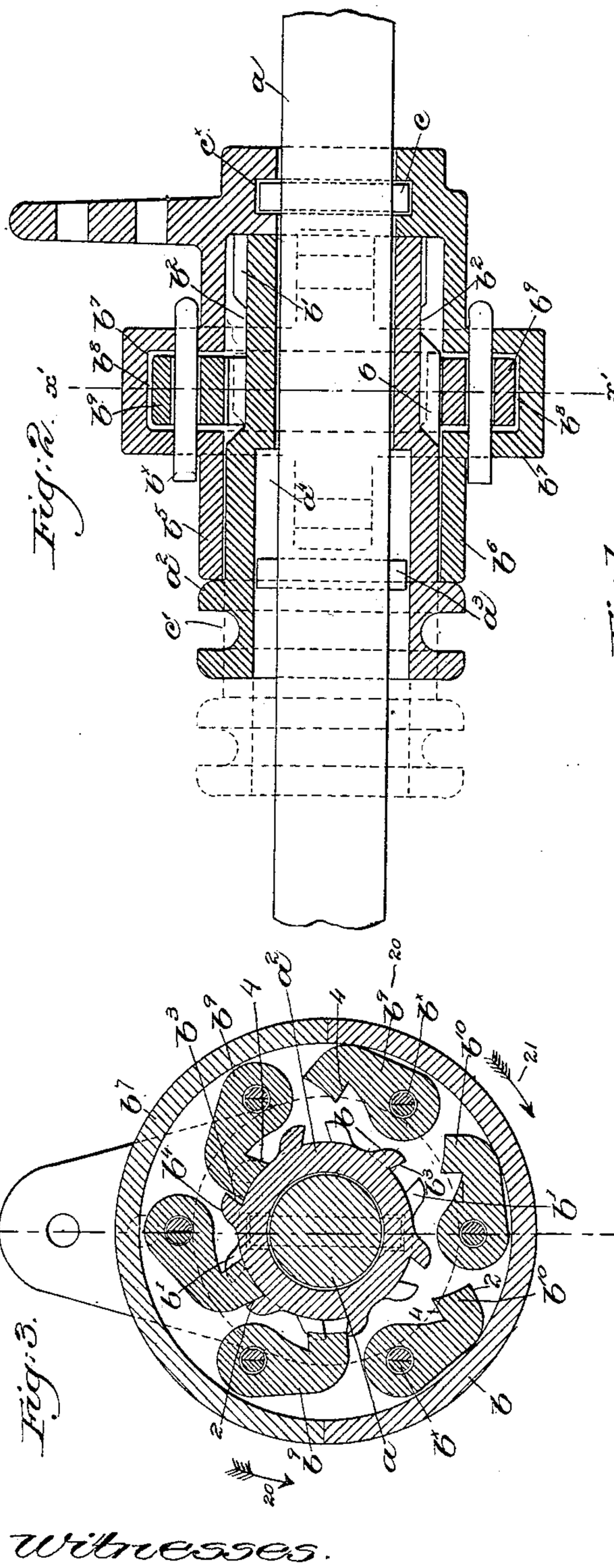


Fig. 2.

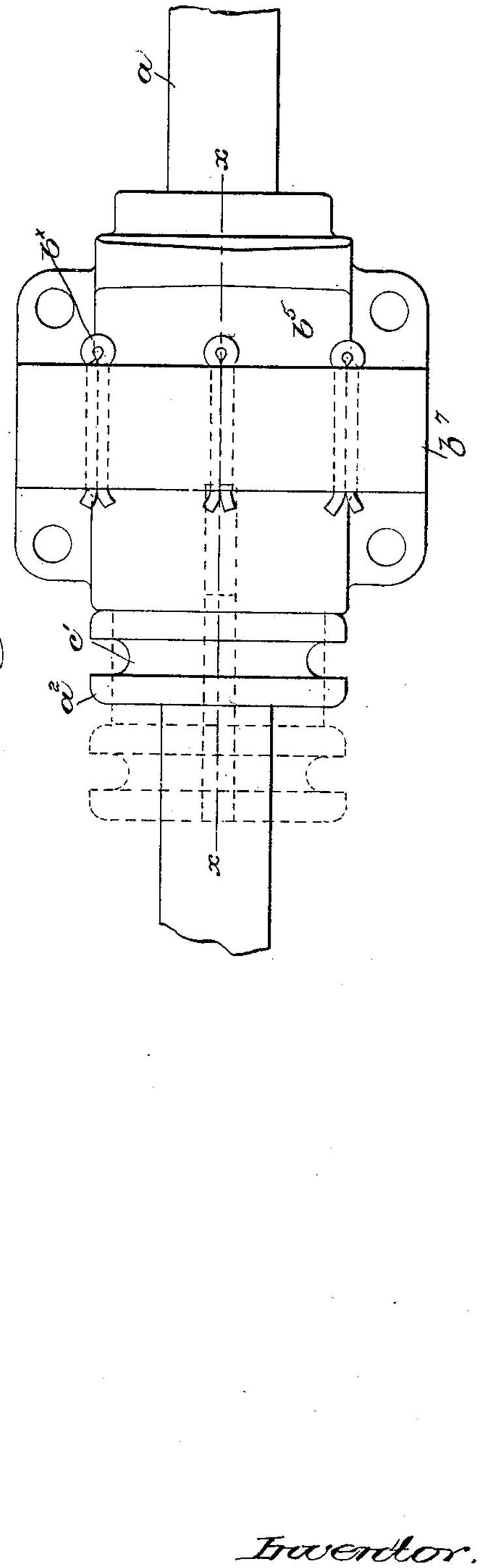


Fig. 1.

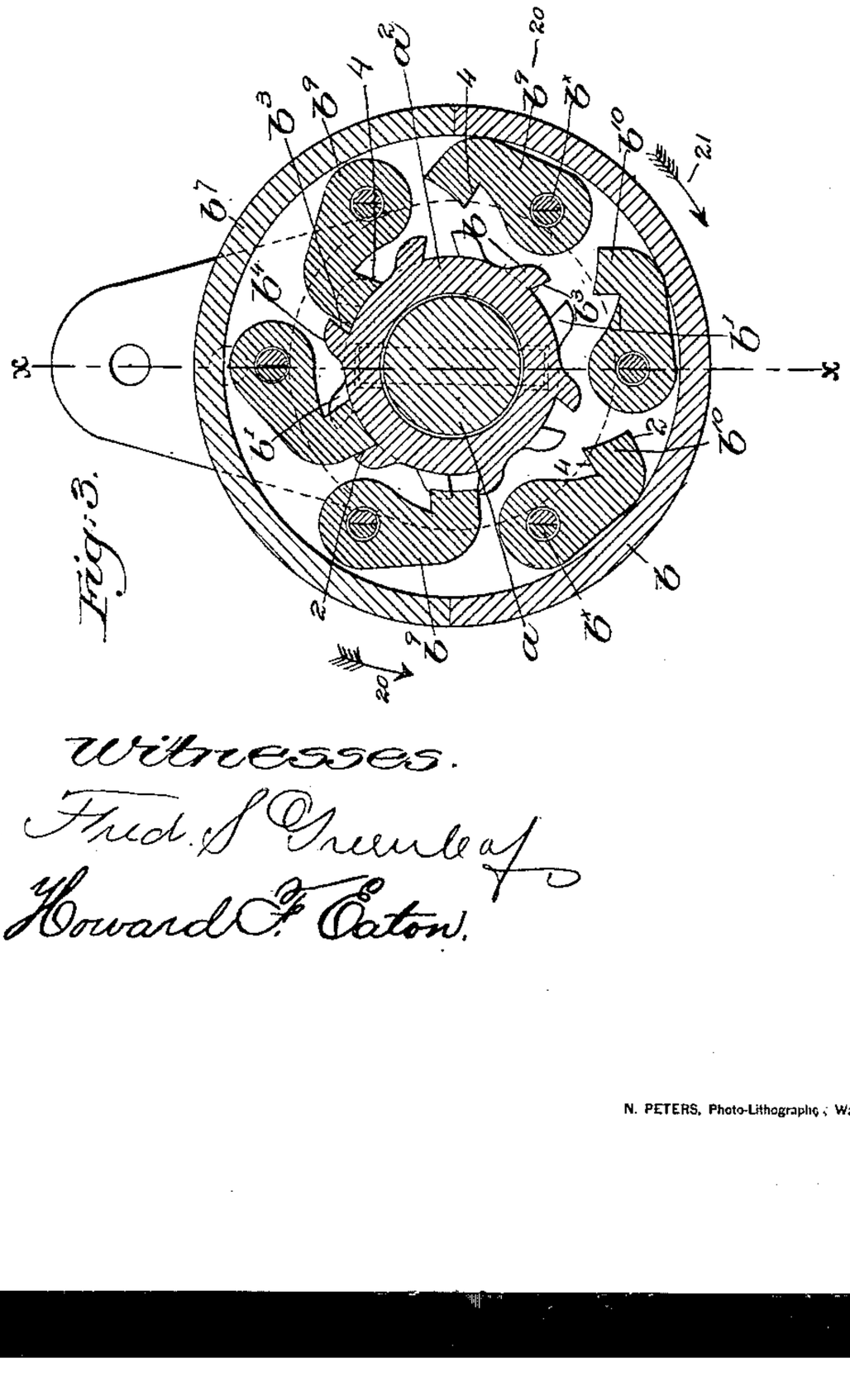


Fig. 3.

Witnesses.
Fred. S. Grundy
Howard F. Eaton.

Inventor.
William B. Turner.
by Crosby & Gregory.
Atty's.

(No Model.) 2 Sheets—Sheet 2.

W. B. TURNER.

REVERSIBLE RATCHET CLUTCH MECHANISM.

No. 386,044. Patented July 10, 1888.

Fig: 4.

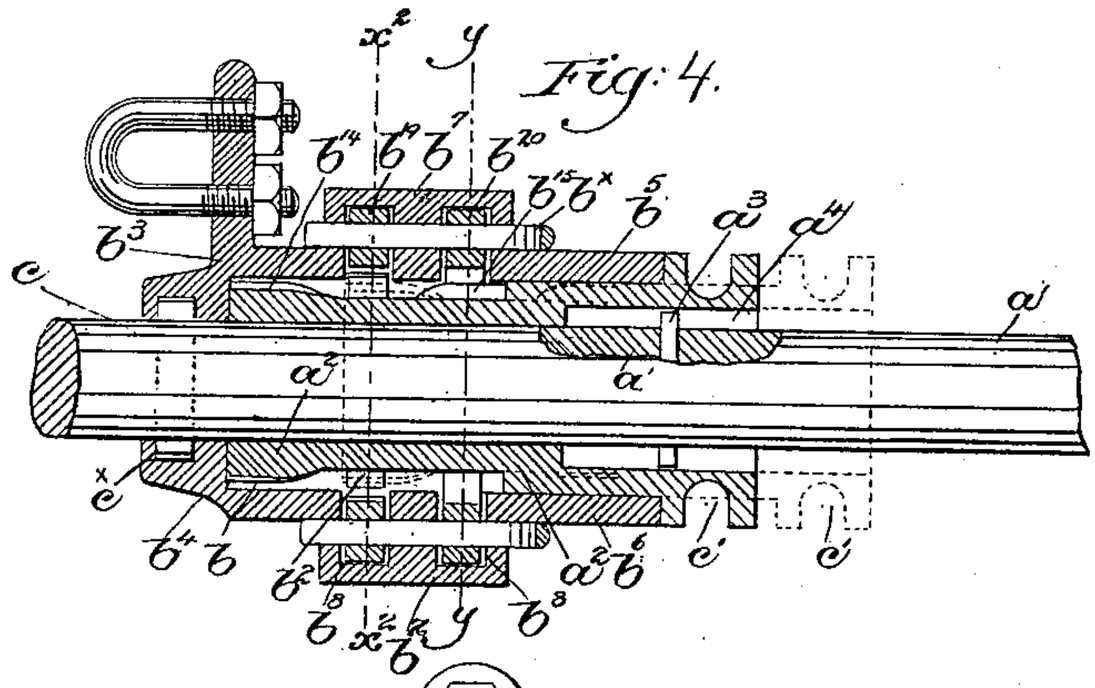


Fig: 5.

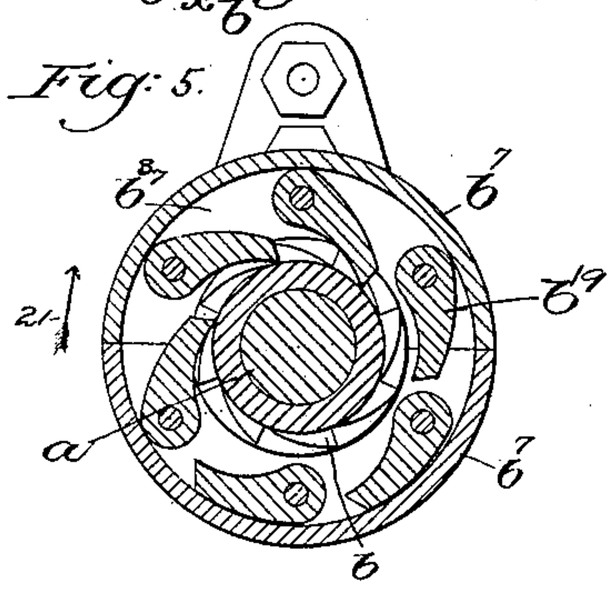
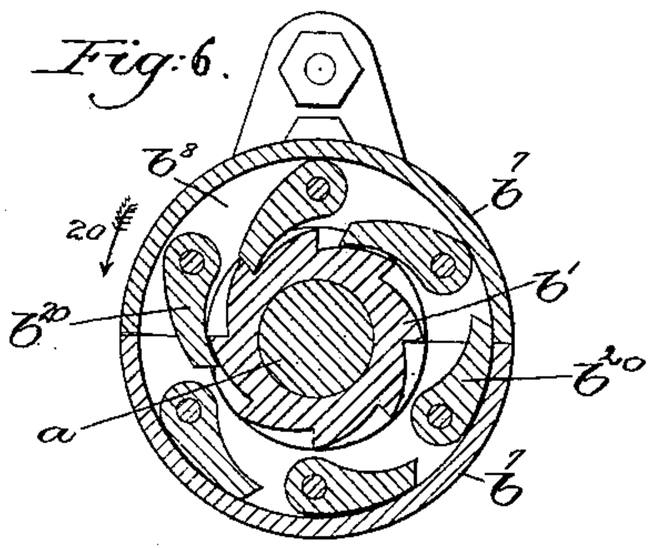


Fig: 6.



Witnesses.
Fred. S. Greenleaf
Howard F. Eaton

Inventor.
William B. Turner.
by Crosby & Gregory
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM B. TURNER, OF NEW YORK, N. Y., ASSIGNOR TO THE TURNER-BEARD AUTOMATIC BRAKE COMPANY, OF SAME PLACE.

REVERSIBLE RATCHET-CLUTCH MECHANISM.

SPECIFICATION forming part of Letters Patent No. 386,044, dated July 10, 1888.

Application filed February 14, 1888. Serial No. 263,946. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM B. TURNER, of New York, county and State of New York, have invented an Improvement in Reversible Ratchet-Clutch Mechanisms, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to a reversible ratchet-clutch mechanism, and is an improvement upon the clutch shown and described in United States Patent No. 367,077, granted to me July 26, 1887, it having for its object to improve and simplify the construction of the same.

My invention therefore consists, essentially, in a reversible ratchet-clutch mechanism, of a shaft, a shell, and a sleeve on the said shaft, combined with two sets of oppositely-inclined teeth and with pawls or latches to co-operate with the said teeth, substantially as will be described.

Figure 1 shows in side elevation a sufficient portion of a shaft provided with my improved ratchet-clutch mechanism to enable my invention to be understood; Fig. 2, a vertical longitudinal section of the ratchet-clutch mechanism shown in Figs. 1 and 3, the section being taken on line $x\,x$, looking to the left in Fig. 3, the shaft being in elevation; Fig. 3, a transverse section of Fig. 2 on line $x'\,x'$, looking toward the right; Fig. 4, a longitudinal section of a modified form of ratchet-clutch mechanism; Fig. 5, a transverse section of Fig. 4 on line $x^2\,x^2$, and Fig. 6 a transverse section of Fig. 4 on line $y\,y$.

The shaft a, which may be a main or counter shaft, has connected to it a sleeve, a^2, constituting part of my improved ratchet-clutch mechanism, the said sleeve being secured to the shaft by a spline-connection, shown as a pin, a^3, extended into a longitudinal slot, a^4, in said sleeve, thus permitting the said sleeve to be moved longitudinally on the said shaft, but preventing it from revolving thereon.

The sleeve a^2, as herein shown, has cut or otherwise formed on or secured to it two sets, $b\,b'$, of teeth oppositely inclined or pointed, the said sets of teeth being shown as separated by a smooth or plain portion or band, b^2, of the sleeve a^2. Each tooth $b\,b'$, as shown in Fig. 3, has one face made straight or flat, as at b^3, and its other face or back curved or rounded, as at b^4, for a purpose to be hereinafter described.

The sleeve a^2 is partially covered, as shown, by a shell, herein shown as made in two parts or pieces, $b^5\,b^6$, each provided with an annular enlargement, b^7, which, when the said parts are put together, forms an annular groove, b^8, in which are pivoted, as at $b^\times$, a series of preferably gravity pawls or latches, b^9. Each gravity pawl or latch b^9, as shown in Fig. 3, is provided with a finger, as b^{10}, of substantially the same size as the flat portion or face b^3 of the teeth $b\,b'$, one face, as 2, of the said finger co-operating with one set of teeth, as b, while the other face, as 4, (see Fig. 3,) co-operates with the other set of teeth, as b', to cause the shell to be rotated with the shaft, as will be described.

Each part $b^5\,b^6$, comprising the shell referred to, is preferably provided near one end with a channel, $c^\times$, which, when the parts are put together, form an annular groove, into which is extended and adapted to rotate a pin or rod, c, herein shown as extended diametrically through the shaft a to prevent longitudinal movement of the shell on the shaft.

The sleeve a^2, beyond the shell referred to, is provided with a groove, c', which in practice may be engaged by a forked lever or shipper. (Not herein shown, but which is connected to suitable mechanism to produce a longitudinal or sliding movement of the said sleeve on the shaft a.)

As shown by full lines, Fig. 1, the sleeve a^2 is in its innermost position, the uppermost pawls or latches, b^9, resting upon the sleeve a^2, between the teeth b. With the sleeve a^2 in this position the shaft a may be rotated in the direction of arrow 20, Fig. 3, without rotating the shell, the pawls or latches b^9 riding over the curved or rounded backs of the teeth b. If the shaft is rotated in the opposite direction, as indicated by arrow 21, while the sleeve a^2 is in its full-line position, the face 2 of the fingers b^{10} of the uppermost pawls will be engaged by the flat face, as b^3, of the teeth b, co-operating therewith, and rotate the shell with the shaft.

To enable the shaft *a* to be rotated in the direction indicated by arrow 21 independently of the shell, the sleeve a^2 is drawn into its dotted-line position, Figs. 1 and 2, bringing the teeth *b'* in line with the pawls. When the shaft is rotated in the direction indicated by arrow 21, the pawls are lifted by and ride over the curved backs of the teeth *b'*; but if the shaft *a* is rotated in the direction indicated by arrow 20, the face 4 of the fingers b^{10} on the uppermost pawls will be engaged by the flat face of the teeth *b'* and cause the shell and shaft to rotate together.

I prefer to employ a single set of pawls to co-operate with the teeth on the sleeve a^2, as shown in Fig. 1; but instead thereof I may use two sets of pawls, b^{19} b^{20}, of ordinary construction and arranged in opposite directions, as shown in Figs. 4, 5, and 6. When two sets of pawls are used, the teeth b^{14} b^{15}, which in this case may be of ordinary form, are separated by a plain portion or band, b^2, of such width as to permit one set of pawls, as b^{19}, to rest on it, while the other set of pawls, as b^{20}, is in line with the teeth b^{15}.

I have herein shown the sleeve a^2 as provided with the oppositely-inclined teeth *b b'* and the pawls as pivoted in the shell; but it is evident, and I consider it within the scope of my invention, that I can reverse the arrangement shown and pivot the pawls on the sleeve and provide the shell with the oppositely-inclined teeth.

My improved reversible ratchet-clutch mechanism is especially adapted to be used and operated substantially in the manner shown and described in my patent referred to, the shell being connected to the brake-lever and rotated to engage the brake-shoes with the car-wheels by rotation of the sleeve a^2, splined upon the shaft *a*, which latter may carry a friction-disk (not shown) and be rotated by the revolution of the car-axle, as in my said patent.

I claim—

1. In a reversible ratchet-clutch mechanism, a shaft, a shell, and a sleeve on the said shaft, combined with two sets of oppositely-inclined teeth and with pawls or latches to co-operate with the said teeth, substantially as described.

2. In a reversible ratchet-clutch mechanism, a shaft, a shell, and a sleeve on the said shaft, combined with two sets of oppositely-inclined teeth and with gravity pawls or latches to co-operate with the said teeth, substantially as described.

3. In a reversible ratchet-clutch mechanism, a shaft and a sleeve provided with oppositely-inclined teeth, as *b b'*, combined with a shell and a series of pawls pivoted to said shell to co-operate with the said inclined teeth, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM B. TURNER.

Witnesses:

JAS. H. CHURCHILL,

B. DEWAR.