(No Model.) 2 Sheets—Sheet 1.

E. C. SMITH & S. W. BALCH.

RAIL SAWING MACHINE.

No. 365,026. Patented June 14, 1887.

Fig. 1.

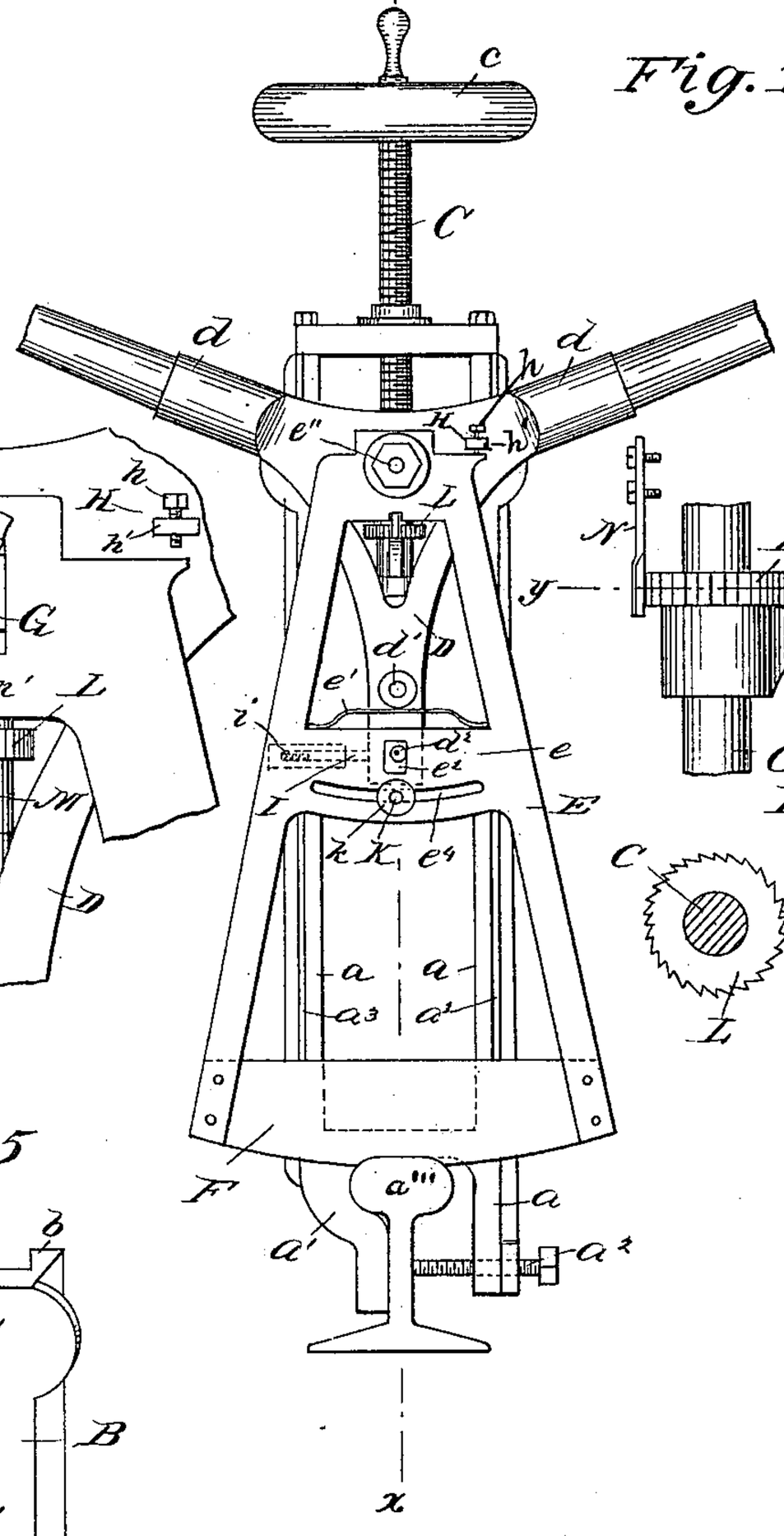


Fig. 4.

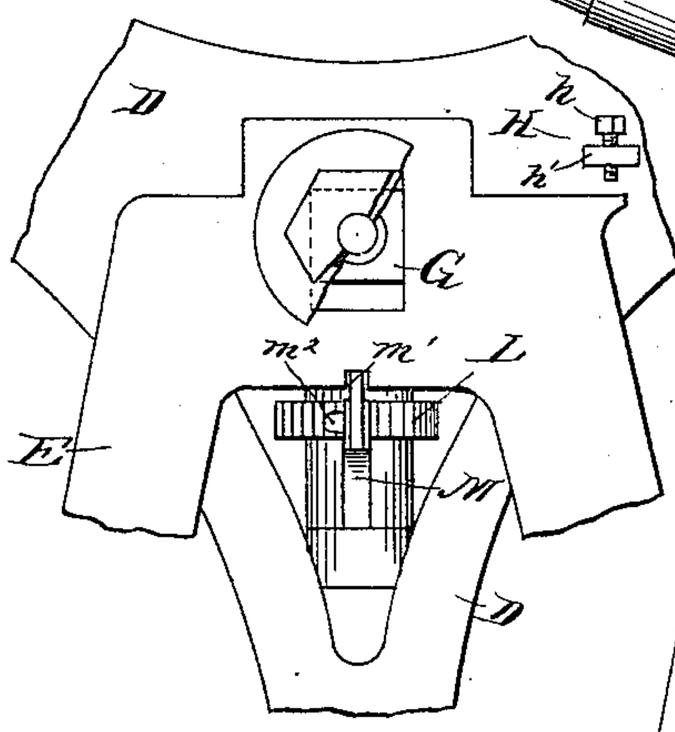


Fig. 6.

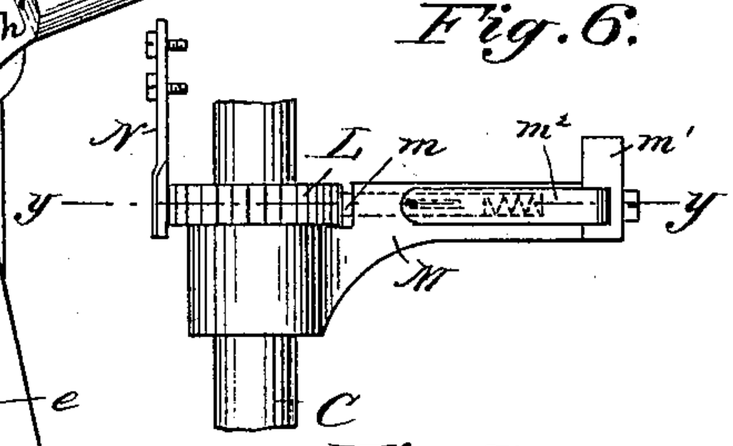


Fig. 7.

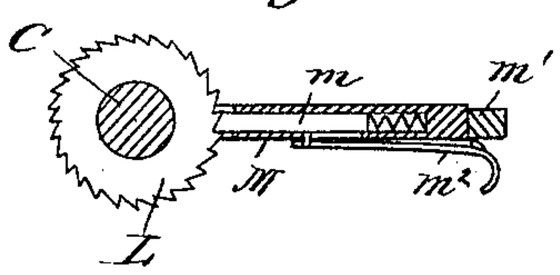
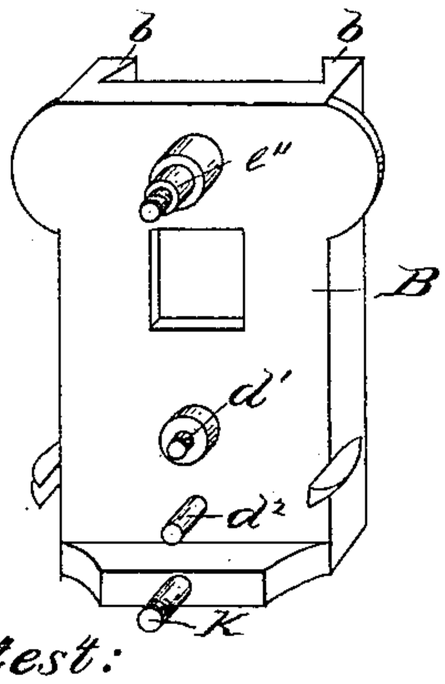


Fig 5



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(No Model.) 2 Sheets—Sheet 2.

E. C. SMITH & S. W. BALCH.

RAIL SAWING MACHINE.

No. 365,026. Patented June 14, 1887.

Fig. 2.

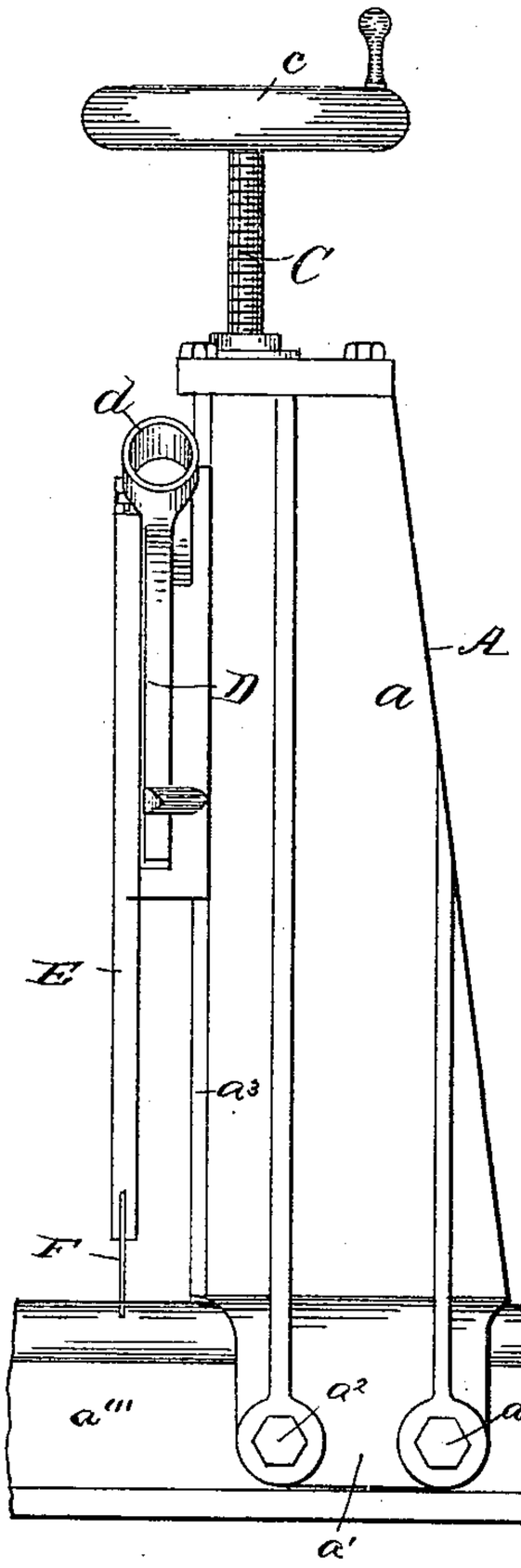
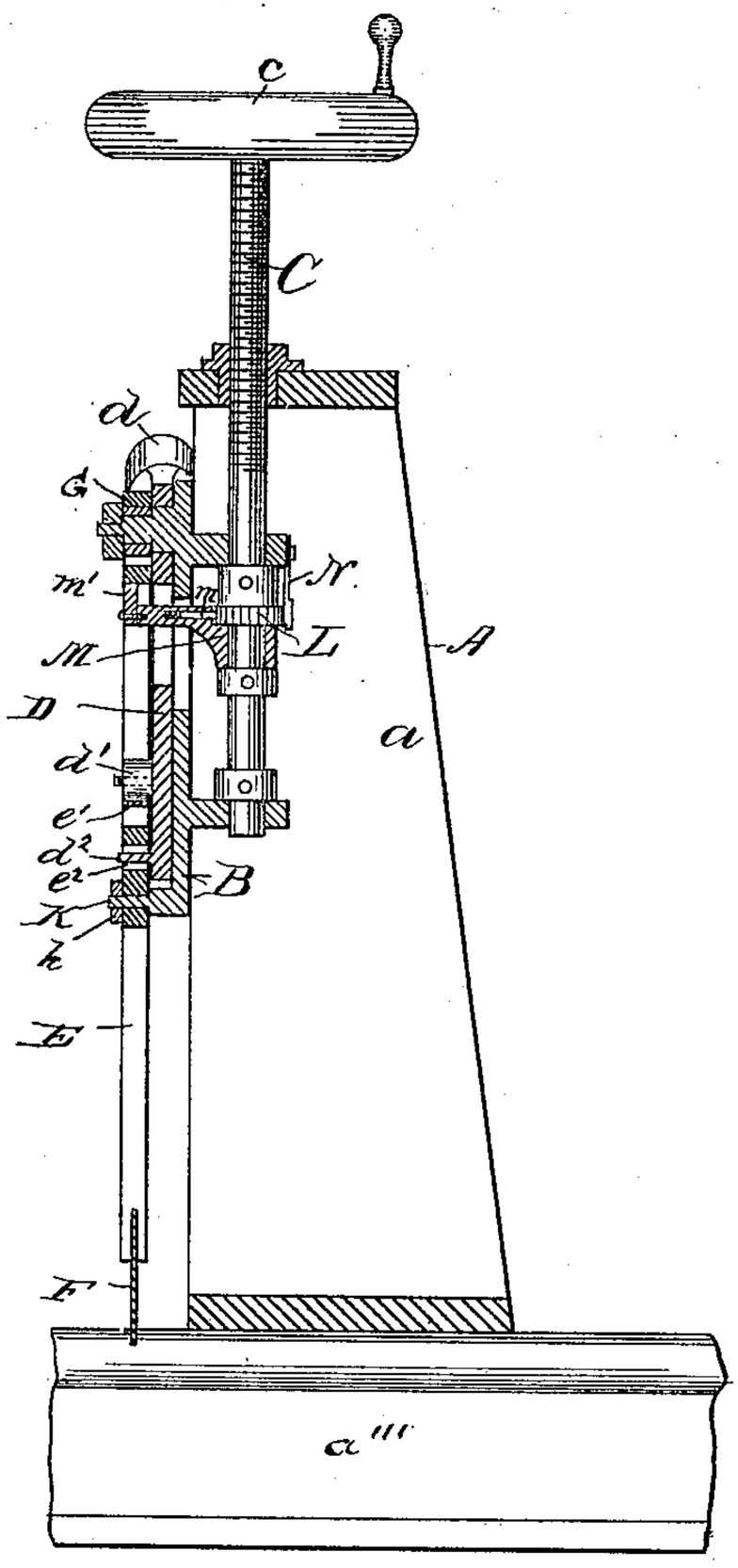


Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWARD C. SMITH, OF BROOKLYN, AND SAMUEL W. BALCH, OF YONKERS, NEW YORK, ASSIGNORS TO SAID EDWARD C. SMITH.

RAIL-SAWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 365,026, dated June 14, 1887.

Application filed October 19, 1886. Serial No. 216,640. (No model.)

To all whom it may concern:

Be it known that we, EDWARD C. SMITH and SAMUEL W. BALCH, citizens of the United States, residing, respectively, at Brooklyn, in the county of Kings and State of New York, and at Yonkers, in the county of Westchester, in the said State of New York, have invented certain new and useful Improvements in Rail-Sawing Machines, of which the following is a full, clear, and exact specification.

Our invention relates to an improved device for cutting or sawing off railroad-rails, and belongs to that class in which a cutting-saw is mounted in a suitable frame to oscillate to and fro or past the rail to sever the same; and it consists more particularly, first, in the peculiar devices for feeding the saw to the rail, and, secondly, in certain mechanism adapted to insure the uniform pressure of the saw against the rail to be cut during the forward movement of the saw, and to relieve the same of the pressure during the return movement.

In the accompanying drawings, which fully illustrate our invention, Figure 1 is a front view of our device clamped upon a railroad-rail. Fig. 2 is a side view of the same. Fig. 3 is a vertical central section, taken on the line *x x* of Fig. 1. Fig. 4 is an enlarged view of a portion of the oscillating yoke carrying the cutting-saw. Fig. 5 is a perspective view of the vertically-moving carriage to which the oscillating yoke is pivoted. Fig. 6 is a detached view of the pawl-and-ratchet movement employed to feed the saw to the rail, and Fig. 7 is a horizontal section through the pawl and ratchet shown in Fig. 6 on line *y y*.

A is a frame composed of two parallel plates, *a a*, and provided at its lower end with jaws *a' a'* to receive the rail *a'''*, and clamp-screws a^2 a^2 for securing the frame to the same. The two plates *a a* are grooved at their forward edges to form guides a^3 a^3.

B is a sliding frame or carriage having backward and inwardly projecting flanges *b b*, formed to embrace the frame A, and slide in the guideways a^3 a^3, so that the carriage B may have a movement in the frame A to and from the rail clamped therein.

The movement of the carriage B to and from the rail is effected through a threaded shaft, C, journaled to the carriage, and working through a threaded opening in the upper part of the frame A. A crank or hand wheel, *c*, is mounted upon the upwardly-projecting end of the shaft C, so that the movement of the carriage may, if required, be independent of the remaining part of the mechanism hereinafter explained.

Pivoted to the face of the carriage B is a Y-shaped frame D, the upward and outwardly extending arms of which are made to terminate in sockets *d d*, into which may be inserted handles or levers, and by which the frame D may be made to oscillate upon its journal-bearing upon the carriage B. A V-shaped yoke, E, having a cross-bar, *e*, is pivoted to the frame D, concentric with the journal-bearing of the latter, or preferably, as shown, upon the same journal-pin *e''* extended, and is made to carry between its extended arms and projecting toward the rail a cutting-saw, F.

The yoke E is mounted upon its journal-bearing by means of a journal-block, G, which has a limited vertical movement in said yoke, so that the yoke may have a slight movement to and from the rail to be cut, independently of the feed-screw C, and the yoke E is retained in its lowermost position by means of a projecting pin or lug, *d'*, upon the frame D, preferably provided with a friction-roller, and a spring, *e'*, interposed between said pin *d'* and the cross-bar *e* on the yoke E.

A pin, d^2, is made to project outwardly from the oscillating-frame D through an opening, e^2, in the cross-bar *e* of the yoke E, so that as the frame D is oscillated back and forth upon its bearing the yoke E will move with it and carry the cutting-saw F back and forth over the rail.

As will be readily understood, the oscillating movement of the frame E may be effected by operating the handles or levers inserted in the sockets *d d* on the frame D, and any unusual pressure on the cutting-saw F will cause a compression or yielding of the spring *e'*.

In order to allow of a slight vertical and lateral movement of the yoke E independent of the frame D, the opening e^2 is made larger

than the pin d^2. A stop or lug is made to project from the face of the frame D, preferably as shown at H—that is, with a fixed lug, h', attached to the frame D and provided with a set-screw, h, which is made to bear upon an end point or projection on the upper side of the yoke E. This stop is set so that at the beginning of the cutting-stroke of the saw the frame D will be made to turn on its bearing a short distance before the yoke E begins to move, and this first movement of the frame D will cause the stop H to bear upon the upper side of the yoke E. Again, upon the return-stroke of the frame D the said frame will be returned to its first position relatively to the yoke before the latter begins to move, and on this return-stroke will be raised slightly, so as to allow of the saw clearing the rail.

To insure the return of the frame D to its normal position, as compared with the yoke E at the commencement of its return-stroke, we interpose a spring between the said frame D and the yoke E, preferably by mounting a sliding bolt, I, which works through a guide on the rear face of the yoke E, and is made to bear upon the downwardly-projecting arm of the frame D, being held in its outwardly-projecting position by the spring i. A curved slot, e^4, is formed in the cross-bar e of the frame or yoke E, and through this slot projects a pin, K, attached to the carriage B, provided with a nut or washer, k. This serves as a brace or guide to steady the movement of the oscillating frame E.

The carriage B and the saw pivoted thereto may, as before stated, be fed toward the rail to be cut by means of the feed-screw C, operated through the crank or hand-wheel c; but we prefer to effect this feeding motion of the saw-frame by mechanism operated through the oscillating movement of the saw-frame itself, and for this purpose we mount upon the shaft C of the screw a toothed-wheel or ratchet, L, and journal upon the shaft an arm, M, extending forward through an opening in the carriage B and provided with a sliding spring-actuated pawl, m, adapted to mesh into the teeth of the ratchet L and engage the same to rotate the screw C while the arm moves in one direction and to snap past said teeth when the arm moves in the opposite direction. This arm M is given its backward and forward movement during the operation of the saw by means of an upwardly-projecting lug, m', attached to its end, and made to engage in a notch in the yoke E, so that as the yoke is oscillated upon its bearings it will carry back and forth with it the swinging end of the arm M.

To provide for the independent operation of the feed-screw C, when desired, the spring-pawl m has attached to it, by means of a pin extending outwardly through its guides, a hook or spring, m^2, adapted, when it is drawn out, to withdraw the pawl from its engagement with the ratchet-teeth to hook over or be retained by the end of the arm M, and thereby prevent the action of the pawl and ratchet or their interference with the independent action of the feed-screw C.

Any movement of the feed-screw that may be caused by a jar to the mechanism, or during the retrograde movement of the feed-pawl m, is prevented by a spring-arm, N, attached by one end to the carriage B, and made to bear at its free end upon the periphery of the ratchet-wheel L.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a rail-sawing machine, the combination, with a frame carrying an oscillating saw, and means for feeding said saw to the rail, of a spring arranged to press the saw down to the rail during its cutting operation, as set forth.

2. The combination, with the oscillating saw-frame having means for pressing the saw against the rail when cutting, of a spring-actuated bolt arranged to bear on said frame to relieve the pressure on the return-stroke of the saw, as set forth.

3. The combination, with the frame, sliding carriage, feed-screw, and oscillating frame pivoted to said carriage, of a saw-carrying frame mounted on its journal by means of a block adapted to have a limited vertical movement, whereby the said frame has a movement to and from the rail independent of the feed mechanism, as set forth.

4. The combination, with the frame A, carriage B, and feed-screw C, of the Y-shaped frame D, having lugs d', the saw-carrying yoke E, provided with cross-bar e, journal-block G, adapted to have a limited vertical movement, and spring e', interposed between said lug and cross bar, as and for the purpose set forth.

5. In a rail-sawing machine, the combination of the frame A, provided with jaws a' and guideways a^3, sliding carriage B, having inwardly-projecting flanges b, threaded shaft C, Y-shaped frame D, mounted on said carriage and provided with sockets d, and V-shaped yoke E, carrying the cutting-saw F, all arranged and operating as set forth.

6. The combination, with the frame A, its carriage B, and feed-screw C, of the oscillating frame D, pivoted to said carriage and provided with pin d^2, and saw-carrying yoke E, pivoted to said frame D, so as to have a limited independent movement and having the enlarged opening e^2, and provided with lug h' and set-screw h, as and for the purpose set forth.

7. The combination, with the oscillating frame D, of the saw-carrying yoke E, pivoted thereto, and provided with a spring-actuated sliding bolt arranged to bear against said frame D, as and for the purpose set forth.

8. In a rail-sawing-machine, the combination, with the frame and its sliding carriage, of feeding mechanism consisting of a threaded

shaft journaled to said carriage, a ratchet-wheel mounted on said shaft, and an arm journaled on said shaft projecting through an opening in the carriage and provided with a spring-actuated pawl meshing with the ratchet-wheel and having a lug to engage a notch in the saw-carrying yoke, as and for the purpose set forth.

9. The combination, with the screw-shaft C, and ratchet L, of the arm M, spring-pawl *m*, and hook m^2, as and for the purpose set forth.

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SAMUEL W. BALCH.

Witnesses:
S. J. JONES,
K. NEWELL.