(No Model.) 2 Sheets—Sheet 1.

G. H. RYAN.

TACK MAKING MACHINE.

No. 561,285. Patented June 2, 1896.

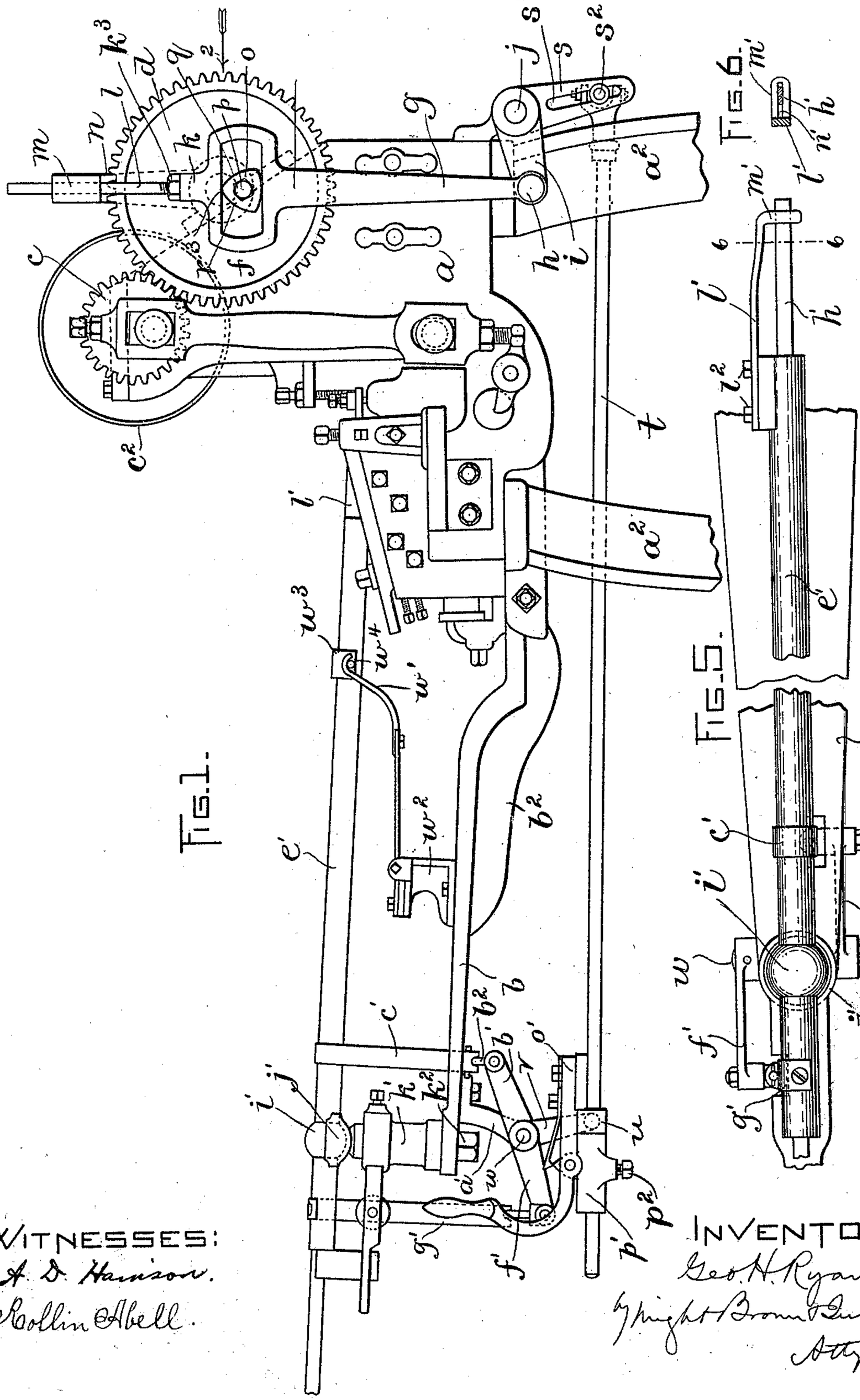

FIG. 1.

FIG. 5.

FIG. 6.

WITNESSES:
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Rollin Abell.

INVENTOR:
Geo. H. Ryan
by Wright Brown & Quinby
Attys.

(No Model.) 2 Sheets—Sheet 2.

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FIG. 2.

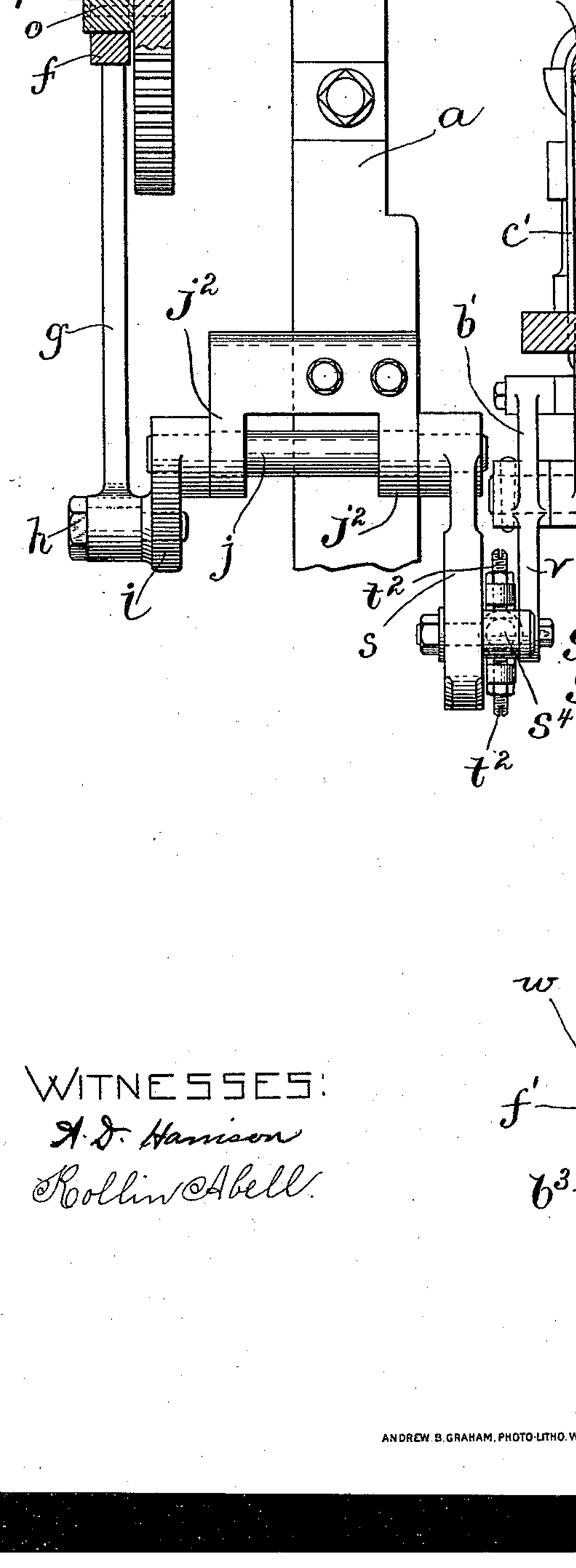

FIG. 3.

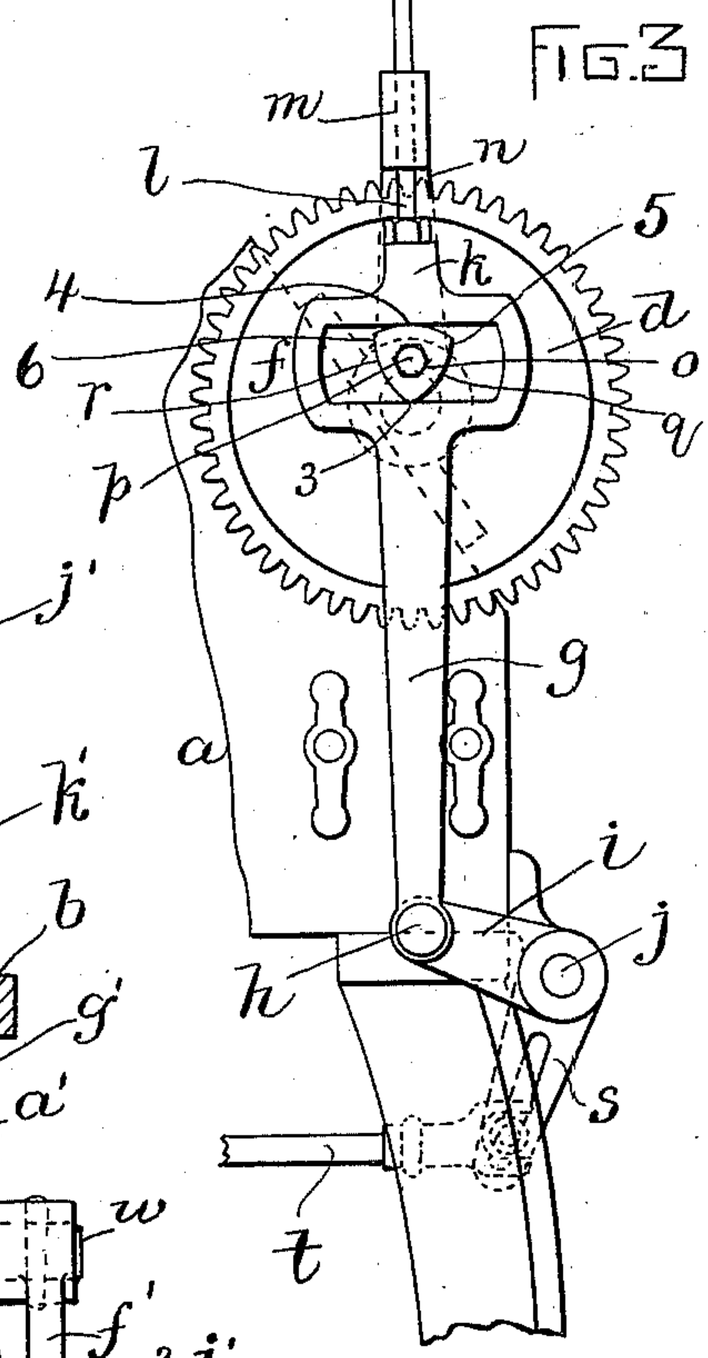

FIG. 4.

WITNESSES:

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INVENTOR:

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Attys.

UNITED STATES PATENT OFFICE.

GEORGE H. RYAN, OF BROCKTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS TO BARROWS & GREELY AND GEORGE V. SCOTT, OF SAME PLACE.

TACK-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 561,285, dated June 2, 1896.

Application filed October 14, 1895. Serial No. 565,559. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. RYAN, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Tack-Making Machines, of which the following is a specification.

This invention relates to tack-making machines of the class in which a blank or strip of sheet metal is presented to the machine through a tubular carrier, the same being given a partial rotation after the cutter has acted upon the strip in order to present the opposite side of the strip to the next action of the cutter to insure the proper degree of taper to the tack.

The invention has for its object to provide means to transmit a positive intermittent semirotary movement to the carrier, so that there shall be an interval between each rotation of sufficient length to permit of the cutting action of the cutter while the strip is at rest; and to this end the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side elevation of a tack-machine embodying my improvements. Fig. 2 represents a portion of the machine to which my improvements are attached, looking in the direction of the arrow in Fig. 1, a portion of said figure being shown partially in section. Fig. 3 represents a view of a part of the mechanism shown in Fig. 1 in a different position, to be hereinafter referred to. Fig. 4 represents an end view of the carrier and attached devices, looking from the left in Fig. 1. Fig. 5 represents a top view of the feed-carrier and a portion of the supporting-boom. Fig. 6 is a cross-section on the line 6 6 of Fig. 5.

The same letters and numerals of reference indicate the same parts in all the figures.

I have illustrated my invention as being applied to a tack-machine of the ordinary construction, it having a frame a for supporting the cutters and other operative parts mounted upon lugs or standards a^2. Extending outward from the main frame is the boom b, which supports the feeding devices and the means for imparting to them the intermittent semirotary motion. It is preferably tapering in plan view and is cast or provided with a vertical web b^2 for additional strength.

c indicates a pinion secured upon one end of the driving-shaft, which is provided with a belt-pulley or other power-transmitting means. The pinion c meshes with a gear d, which is likewise secured upon a shaft e, the driving-shaft and the shaft e being both journaled in bearings on the frame a.

The driving-shaft is used to actuate the cutters, which I will not describe, as they are of usual shape and construction and form no part of this invention.

I shall now proceed to describe my improved devices for imparting to the tubular carrier that intermittent semirotary motion which is necessary in machines of this class in order to present the opposite side of the blank or strip of sheet metal to be worked on to the cutters for insuring the proper degree of taper to the tack.

The tubular carrier e', through which the blank h' is fed to the machine, and to which it is desired to give the semirotary motion, as described above, is provided near its outer end with a ball i'.

k' represents a standard suitably secured to the outer end of the boom b by means of a bolt k^2, and is provided at its head or upper end with a socket j', in which the ball i' rests. The inner end of the carrier is provided with an arm l', secured thereto by bolts l^2 and having an offset or laterally-extending portion m', with a slot n', through which the blank or strip of metal h' passes. The construction and arrangement of the carrier and its arm are common to this class of machines and form no part of my invention.

f is a yoke having a downwardly-extending arm g, which is pivoted at h to an arm i upon a rocker-shaft j. The said rocker-shaft j is suitably journaled in bearings j^2, secured to the frame a. The upper part of the yoke is provided with a thickened hub k to receive the threaded end of a rod l, there being a lock-nut k^3 for preventing the rod from working out. The said rod is adapted to reciprocate in an aperture or socket m, formed vertically on a loosely-swinging arm n, supported at its lower end on the shaft e. The latter is in the

nature of a stud-shaft, and is journaled in an elongated bearing a^3 on the frame a, it being threaded on its inner end to receive a retaining-nut e^2. Lubricating material may be fed to the shaft through apertures or ducts a^4, leading from a groove a^5, formed in the cap a^6. As the yoke f is reciprocated by the means now to be described, the arm n will oscillate to accommodate the rod l, supporting it at the same time. Secured to the gear d, by means of a bolt p, or formed integrally with the said gear d, if desired, is what I term a "triangular eccentric," which extends into the yoke f, so as to reciprocate the latter when the gear-wheel d is rotated. The eccentric o is, as just stated, triangular, the sides of the triangle being equal and being curves struck from the opposing angle as a center. The apex 3 of the triangle is coincident with the axial line of the shaft e, so that the face 4, or the side of the triangle opposite the apex 3, is concentric with the shaft e. It will be seen that the cross-head will have two short intervals of rest for every single revolution of the gear-wheel d—that is to say, it will remain at rest from the time the angle 5 is vertical until the angle 6 is vertical.

In Fig. 1 the triangular eccentric is at its lowest point and in Fig. 3 at its highest point, those being the points at which the yoke has its interval of rest.

Upon the inner end of the rocker-shaft j I rigidly secure a rocker-arm s, which is slotted at s' to receive a pin s^2, to which is secured a connecting-rod t. The length of the stroke of the rod t may be varied by adjusting pin s^2 in the slot s'. Upon the pin s^2 is loosely mounted a sleeve s^4, with which engage two inwardly-extending screws t^2, projecting through the bifurcated ends of the rod t. At the outer end of the rod t is a loosely-sliding block u, held in place thereon by a spring-held latch o', pivoted upon a sleeve p', adjustably secured to the said rod t by means of a set-screw p^2.

w is a rock-shaft suitably journaled in a bearing y upon the end of an arm or bracket a', secured to the under side of the boom b. Rigidly secured upon one end of the shaft is an arm v, pivoted at its end to the block u, there being formed with the said arm v a rocking arm b', extending laterally therefrom. Upon the other end of the shaft w is rigidly secured a rocking arm f' equal in length to the arm b' and having its central longitudinal line substantially parallel to the central longitudinal line of the latter.

g' is a flexible strap passing partially around the tubular carrier and having its lower end secured by a pin or bolt g^2 to a block g^3, bolted to the end of the rocking arm f'. c' is a similar strap having its upper end passed in the opposite direction around the tubular carrier and having its lower end secured to the end of the arm b' by a pin b^2 and a block b^3, similar to those upon the end of the arm f'.

The operation of the devices is as follows: The continuous rotation of the gear-wheel d causes the vertical reciprocation of the yoke f through the medium of the triangular eccentric o. When the yoke is at its highest and its lowest points, it is stationary until the side 4 of the eccentric is disengaged from the yoke. This intermittent reciprocation of the yoke f through the arms i and s and the rocking shaft j imparts to the connecting-rod t a similar motion. Thus the oppositely-extending arms b' and f' are reciprocated in opposite directions by the said connecting-rod t and the arm v, and by means of the straps g' and c', respectively, the said arms f' and b' impart to the tubular carrier e' semirotations in opposite directions, each semirotation being preceded by an interval of rest.

In order to steady the motion of the tubular carrier e', I secure a bifurcated spring-strip w' to a standard w^2 on the upper face of the boom, and place on the carrier a saddle w^3, having oppositely-extending pins w^4, adapted to engage the outer ends of the arms of the bifurcated strip w', and to take up the slack in the straps c' and g' the pins b^2 and g^2 are passed through the blocks c^3 and g^3 and are provided with external threads to receive thumb-nuts c^4 and g^4.

Heretofore in this class of machines the means employed to impart the necessary rotation to the feeding devices have been unsatisfactory in operation, from the fact that the action of such means has not imparted a positive movement to the carrier. It is important in feeding the blank to the cutting mechanism that the blank from which the tacks are cut should be so operated as to be semirotated in unison with the cutters and at each semirotation to have a period of rest imparted thereto. In other words, the manipulation of the feeding devices should be positive, a condition which, so far as I am aware, has not heretofore existed. By the means herein shown and described I am enabled to present the blank to the tack-forming mechanism without variation, the triangular eccentric being so arranged as to give two periods of rest with one revolution of the same, and the positive connection of the straps g' c' with the carrier and the means intermediate of said straps and the eccentric enables the latter to impart a positive semirotation to the carrier and a positive dwell at the end thereof.

What I claim is—

1. In a tack-machine of the character described, a power-shaft, a tubular carrier, a triangular eccentric secured upon the power-shaft and having its apex coincident with the axial line thereof and having its base concentric with the power-shaft, and means actuated by the said eccentric for imparting a semirotation to the tubular carrier, as set forth.

2. In a tack-machine, as a means of imparting a semirotary motion to the feeding-carrier thereof, a power-shaft, and a yoke, in

combination with a triangular eccentric having its apex coincident with the axial line of the shaft and having its curved yoke-engaging base concentric with the shaft.

3. In a tack-machine, the combination with the tubular carrier and the straps secured to the opposite sides thereof, of rocking arms to which the straps are secured and having an arm *v*, a power-actuated rod, and a spring-latch for holding the rod in engagement with the arm *v*.

4. In a feeding device for tack-machines, the combination with the driving-pinion, a gear meshing with the pinion, a triangular eccentric mounted upon the face of the gear and having its apex in the axial line of the gear and having its base concentric with said gear, of a yoke engaging the eccentric and adapted to receive intermittent motion therefrom, means substantially as described intermediate of the yoke and feed carrier, whereby when intermittent reciprocating motion is imparted to the yoke the carrier will be given an intermittent semirotary movement, as set forth.

5. In a tack-machine, the combination with the carrier for presenting a blank to the action of the knives, and a power-shaft, of a triangular eccentric secured to the power-shaft and having its apex coincident with the axial line of said shaft, an arm loosely mounted on said shaft and extending above the same, being also provided with a socket, and a yoke engaging the eccentric and connected with the carrier and also having a rod passing through the said socket.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 18th day of September, A. D. 1895.

GEORGE H. RYAN.

Witnesses:
A. D. HARRISON,
C. F. BROWN.