(No Model.) 2 Sheets—Sheet 1.

A. FALLS.

MECHANISM FOR STRIPPING THE TOP FLATS OF CARDING ENGINES.

No. 369,444. Patented Sept. 6, 1887.

Fig. 1.

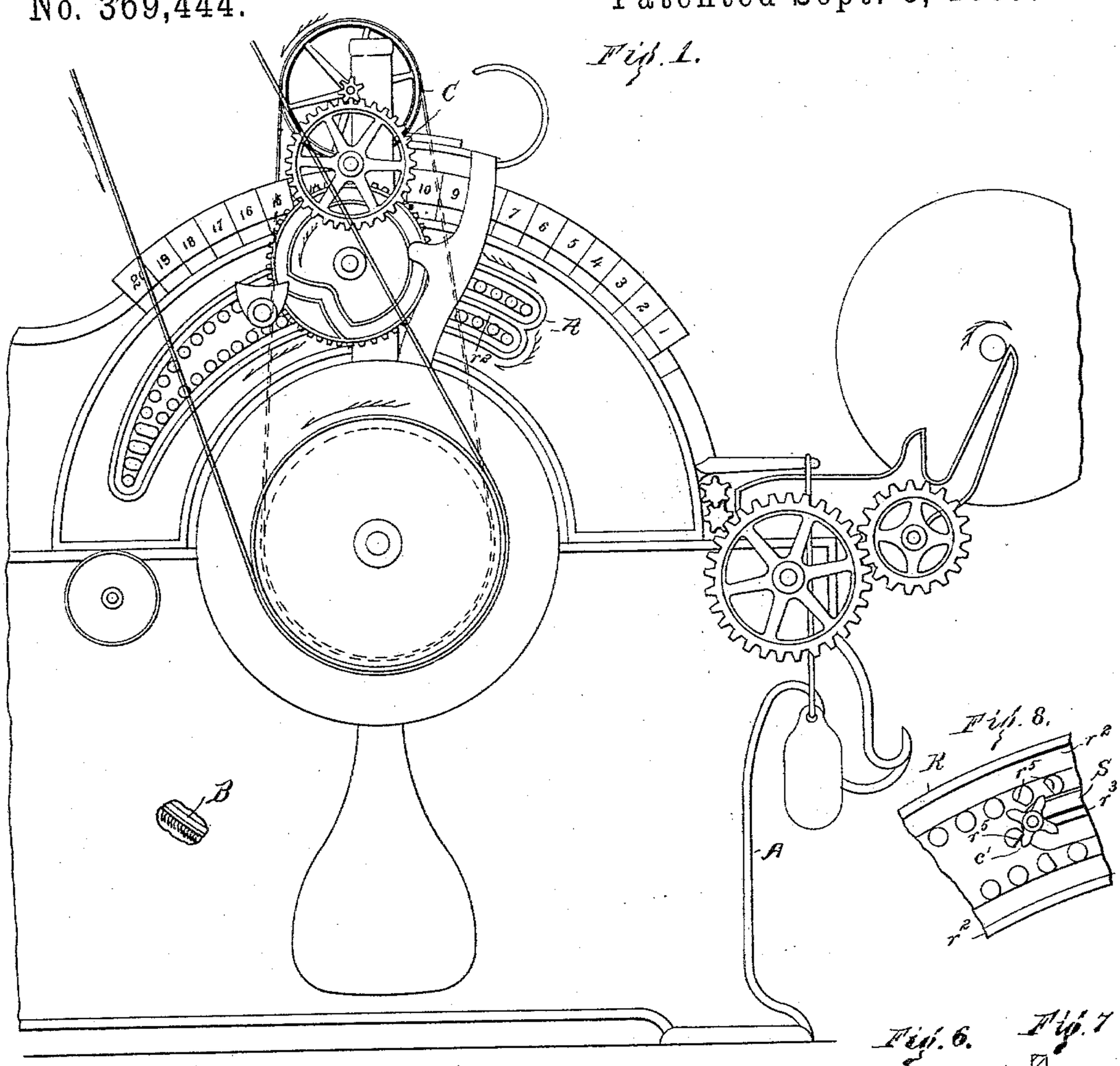

Fig. 8.

Fig. 6.

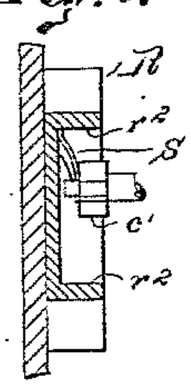

Fig. 7

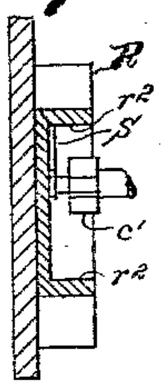

Fig. 2.

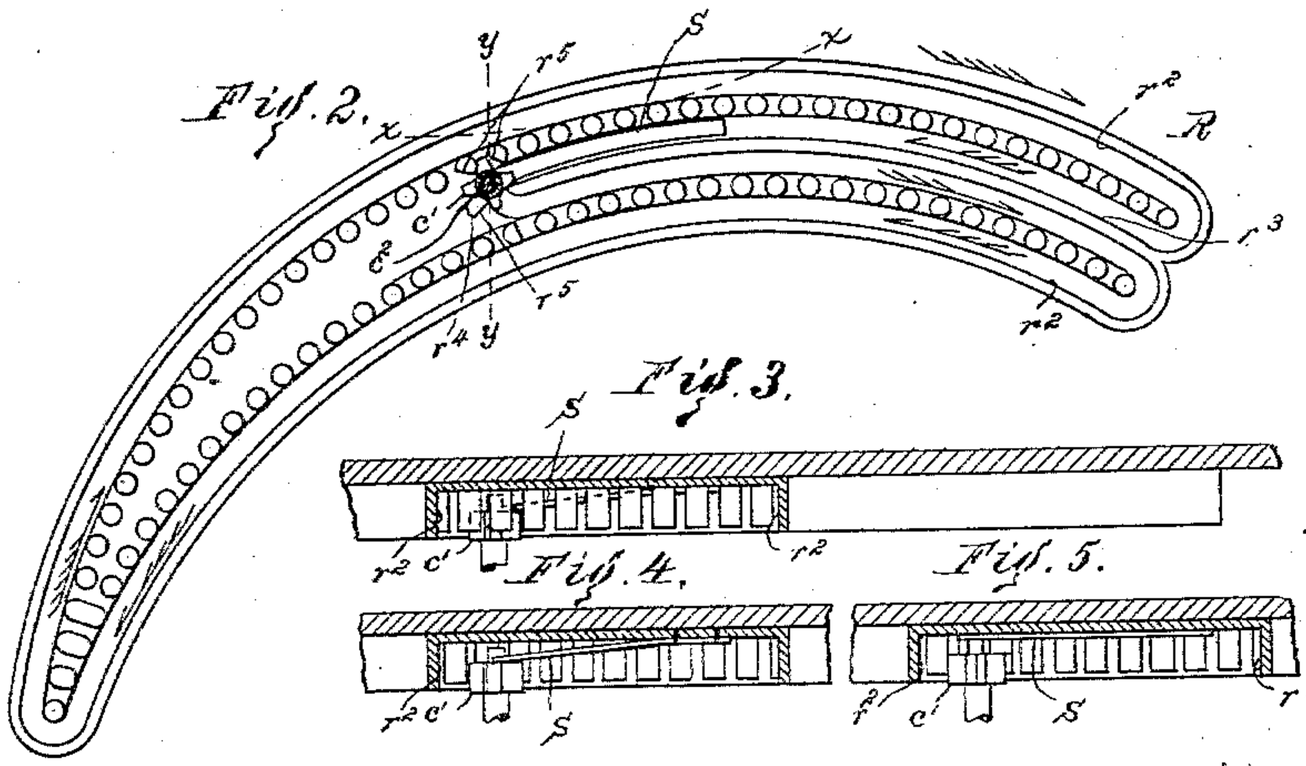

Fig. 3.

Fig. 4.

Fig. 5.

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(No Model.) 2 Sheets—Sheet 2.

A. FALLS.

MECHANISM FOR STRIPPING THE TOP FLATS OF CARDING ENGINES.

No. 369,444. Patented Sept. 6, 1887.

Fig. 9.

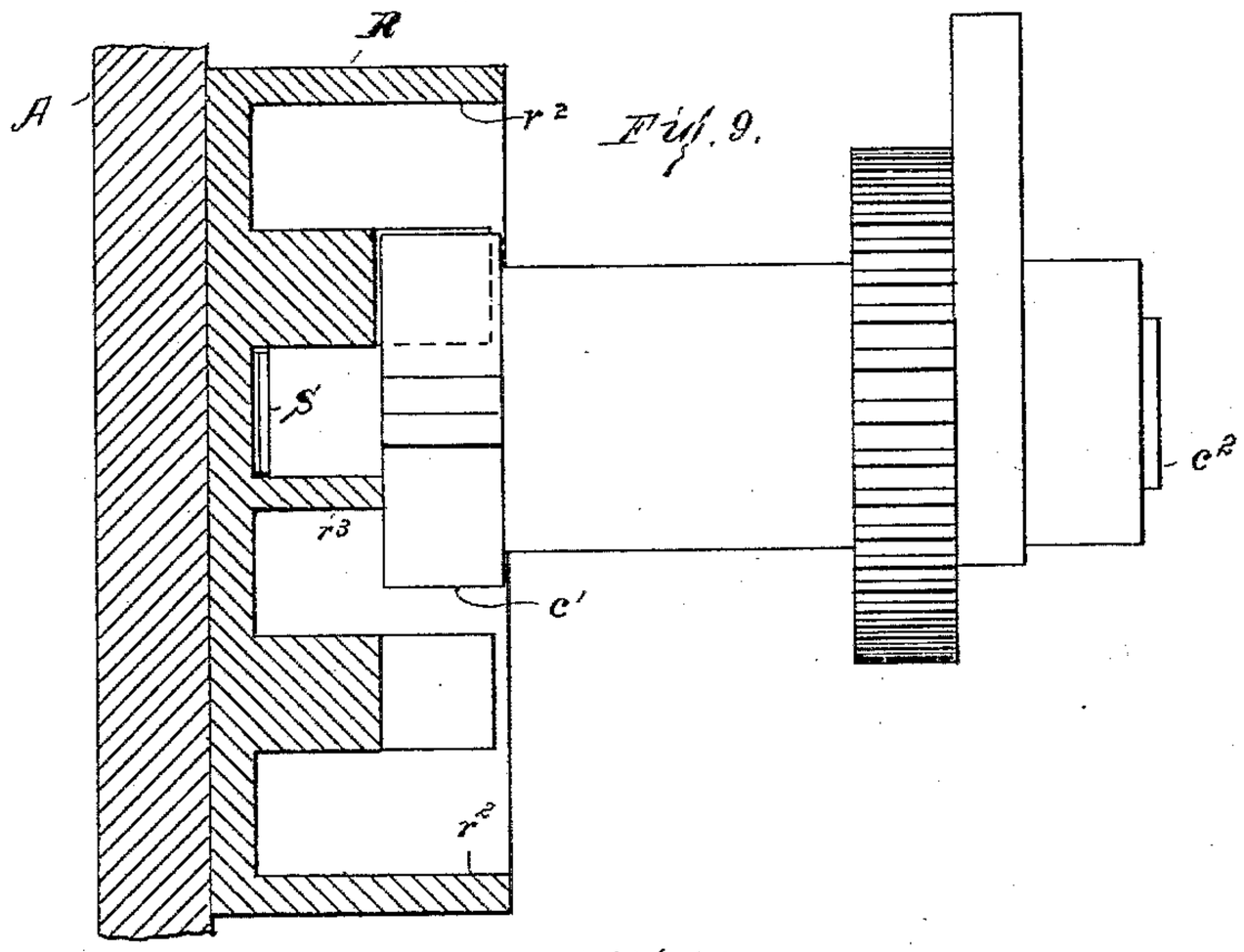


Fig. 10.

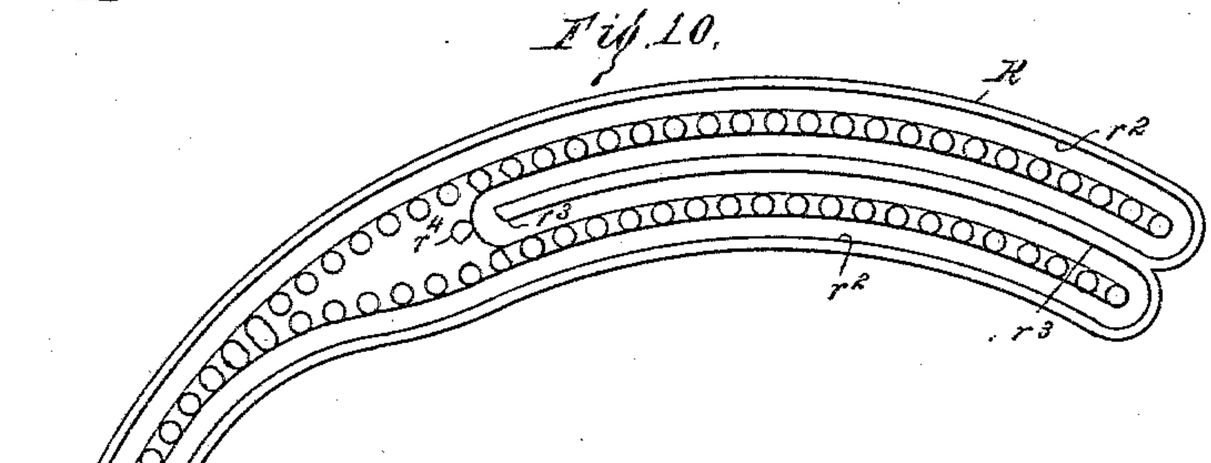
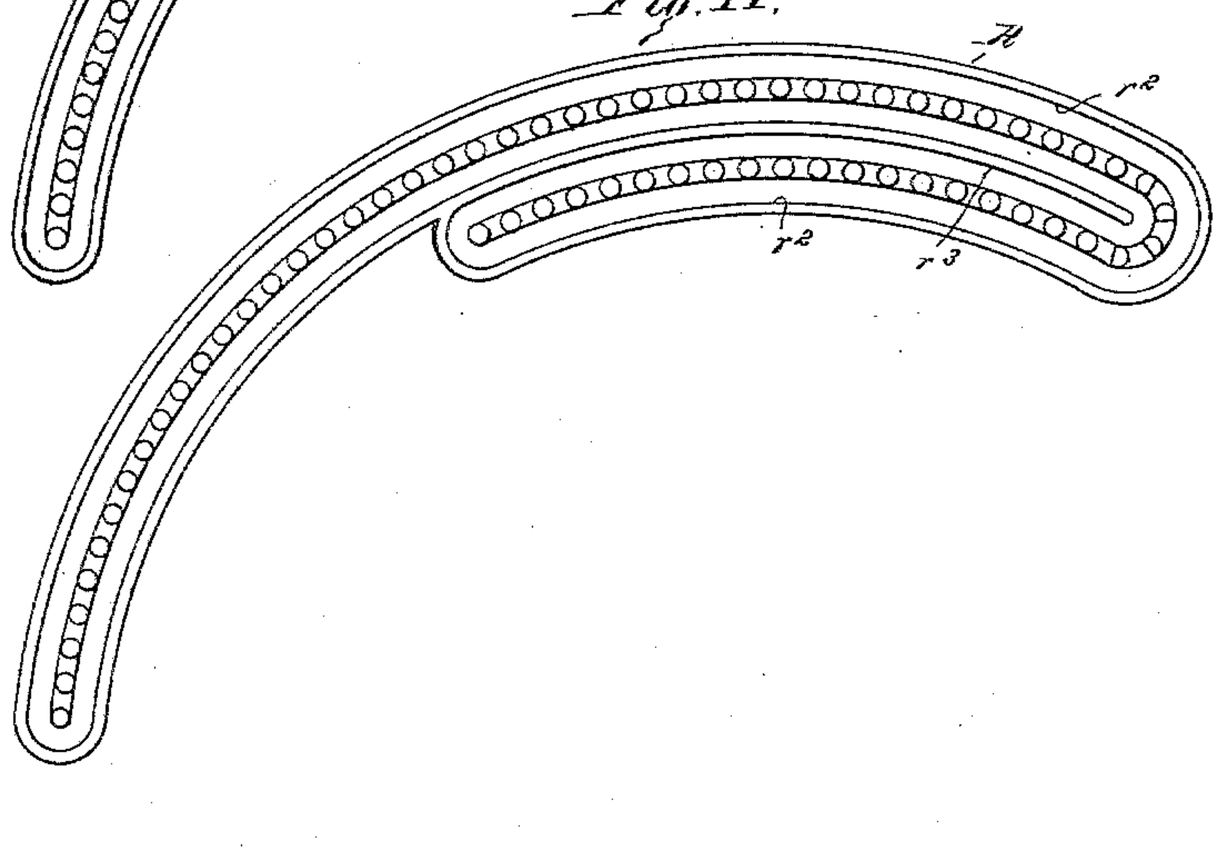


Fig. 11.



Witnesses—
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Inventor—
Alonzo Falls,
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UNITED STATES PATENT OFFICE.

ALONZO FALLS, OF LOWELL, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO ALEXANDER G. CUMNOCK, OF SAME PLACE.

MECHANISM FOR STRIPPING THE TOP-FLATS OF CARDING-ENGINES.

SPECIFICATION forming part of Letters Patent No. 369,444, dated September 6, 1887.

Application filed March 23, 1887. Serial No. 232,079. (No model.)

To all whom it may concern:

Be it known that I, ALONZO FALLS, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Mechanism for Stripping the Top-Flats of Carding-Engines, of which the following is a specification.

My invention relates to carding-engines; and it consists in means whereby the top-flats at the rear of the machine may be stripped twice as often as the other flats.

In the accompanying drawings on two sheets, Figure 1 is a right-side elevation of a carding-engine, omitting a part of the frame at the front of the machine, together with the doffer, a part of the frame being broken away to show the cylinder, showing my improvement attached to the carding-engine; Fig. 2, a side elevation of my improved rack; Fig. 3, a section of said rack on the line *x x* in Fig. 2, showing, also, a section of part of the frame. Fig. 4 is like Fig. 3, except that the upper pins or teeth of the rack are omitted. Fig. 5 is like Fig. 4, except that the trasverse-pinion in Fig. 4 has passed by the spring, while in Fig. 5 the spring is bent inward by said pinion; Fig. 6, a section, partly in elevation, on the line *y y* in Fig. 2, omitting the teeth of the rack; Fig. 7, a section, partly in elevation, of the same parts as are shown in Fig. 6, except that the spring in Fig. 6 is not compressed or pushed aside, but is pushed aside in Fig. 7 by the traverse-pinion; Fig. 8, a side elevation of the central portion of the rack, showing also the traverse-pinion engaged with said rack and having just passed the spring; Fig. 9, an enlarged front elevation of the rack-pinion or traverse-pinion and its journal and the driving-pinion and the stop, also a vertical section of part of the frame and of the rack. Fig. 10 is a side elevation of a modification of the rack shown in Fig. 2; Fig. 11, a side elevation of another modification of the rack shown in Fig. 2.

In carding-engines such as are commonly used for carding cotton the greater part of the work done by the top-flats is done by the flats nearest the feed-rolls—that is, nearest the part of the machine which the cotton first enters—so that these top-flats nearest the feed-rolls require to be more frequently stripped than the others. I accomplish the result desired by giving a new form to the rack, leaving the other parts of the carding-engine unchanged.

In the drawings, A represents the frame, B the cylinder, and C the card-stripping mechanism, which is substantially such as was patented January 27, 1857, to George Wellman, in Letters Patent No. 16,504. The stripping mechanism shown swings about the axis of the shaft of the main cylinder from end to end of the series of flats, which are numbered 1 to 20, stripping every other flat. The rack most commonly employed in the Wellman stripper as now commonly used consists of a series of pins arranged in an arc concentric with the axis of the main cylinder, and with the rack so formed the traverse-pinion c' engages and is rotated in such a direction as to pass over the top of the rack from front to back of the machine—that is, from the doffer-cylinder toward the feed-rolls, or from left to right in Fig. 1—and returns on the under side of the rack, stripping the flats having the odd numbers when moving in one direction and the flats having the even numbers when moving in the other direction. The rack-pinion or traverse-pinion c' turns on a horizontal stud, c^2, which projects from an arm on the frame of the stripping mechanism. The parts commonly used I do not change in any respect, except the rack.

The rack R, as constructed by me, is preferably of the form shown in Fig. 2, having in effect a single row of pins at its front end and for a half of its length. Actually Fig. 2 shows two rows of pins or teeth nearly the entire length of the rack; but the front portion of the rack up to the middle of the same might consist of a single row of pins, as at the extreme left in Fig. 2 and at the left in Figs. 10 and 11, because where two rows are shown the traverse-pinion engages only with the upper surface of the upper row and with the lower surface of the lower row. Back of the middle of the rack the two rows of pins are separated sufficiently to allow the pinion to engage with the under surface of the upper row and with the upper surface of the under row without in either case interfering with the pins of the other row. The pinion is held in engagement with the rack, as the same is commonly used,

by a guide-flange, r^2, which passes from end to end of the rack above and below the same and around the ends of the same. This guide-flange r^2, I retain, and I also use an extension, r^3, of it, passing from the rear end of the rack nearly to the middle of the same between the upper and lower rows of pins. The traverse-pinion passes from front to back of my rack above the same, then under the upper row of pins to the middle of the rack, being guided by the guide-flanges r^2 r^3, and then drops onto the lower row of pins and travels back again to the rear end of the rack, then passes down under the rear end of the lower row of pins and back to the front of the rack, along the under side of the same to the starting-point, a guide-pin, r^4, being used between the upper and lower rows of pins at the middle of the rack opposite the end of the extension r^3 of the guide-flange to engage the traverse-pinion and conduct it from the upper row to the lower row. In order that the traverse-pinion may readily pass from the upper to the lower row of pins at the middle of the rack without the necessity of spreading the rows of pins too far apart, and without altering the shape of the traverse-pinion as commonly used, the last two pins of the upper row before reaching the guide-pin are cut away or flattened at r^5 on the front under side to allow the teeth of the pinion to be drawn out of engagement with them by catching on the guide-pin, because otherwise the teeth of said pinion would be too long to allow of being drawn from the upper row of pins; and for the same reason the guide-pin is similarly flattened, as shown in Figs. 2 and 8, on the side last in contact with the teeth of the pinion, and the first tooth engaged by the pinion after leaving the guide-pin is also flattened on one side, the flat sides of these pins or teeth being in all these cases the sides last in contact with the teeth of the pinion as it passes by them. A leaf-spring is secured between the upper row of rack-pins and the front end of the extension r^3, as shown at S, the free front end of said spring normally standing out from the rack-bed toward the outer ends of the pins, so that when the pinion passes over the spring in the direction shown by the arrows in Fig. 2 the arbor of the pinion presses said spring inward until it passes the front end of said spring, which then springs outward and prevents the return of the pinion. With properly-shaped teeth this spring is not absolutely necessary. The modification shown in Fig. 10 differs from the rack shown in Fig. 2 only in having the rack teeth or pins near the front of the rack actually in a single row for a greater distance.

The modification shown in Fig. 11 accomplishes the same result as the rack shown in Figs. 2 and 10, the pinion, in the case of a rack like that shown in Fig. 11, passing from front to back—that is, from left to right—over the top of the rack and around the rear end thereof, then forward under the extension of the rack, upward over the front end of said extension, along the upper side of said extension, and finally along the under side of the main portion of the rack to the front end thereof.

The modification shown in Fig. 11 dispenses with the guide-pin and is somewhat lighter than the rack shown in Fig. 2; but the rack shown in Fig. 2 is believed to be somewhat quicker in operation, because in the last-named rack the turn from one row of pins to the other is made over one pin (the guide-pin r^4) and in the rack shown in Fig. 11 over the four end pins, (shown at the right of said figure,) which four pins are flattened on the sides last in contact with the traverse-pinion as it passes from the top of the main portion of the rack to the under side of the extension.

I claim as my invention—

1. The traverse-rack having a double section for a portion of its length and having a guide-flange around said rack and between the parts of said double section, and adapted to cause a pinion rotated in engagement therewith to pass over both sides of said rack and double section and to return to the point of starting, as and for the purpose specified.

2. The combination of the top-flats, the cylinder, and the stripping mechanism with the traverse-rack having a double section for a portion of its length and having a guide-flange around said rack and between the parts of said double section, and adapted to be engaged by the traverse-pinion, and by the rotation of said pinion to cause said stripping mechanism to strip some of said flats twice as often as the others of said flats, as and for the purpose specified.

3. The combination of the top-flats, the cylinder, and the stripping mechanism with the traverse-rack having two branches at its rear end and having a guide-flange around said rack and between said branches, and adapted to be engaged by the traverse-pinion of said stripping mechanism to cause said stripping mechanism to strip the rear flats twice as often as the front flats, as and for the purpose specified.

4. The combination of the top-flats, the stripping mechanism, and the cylinder with the traverse-rack having two branches at its rear end and having a guide pin or tooth arranged between said branches at about the middle of said rack to conduct the traverse-pinion from one branch to the other, said traverse-rack and its branches being adapted to be engaged by the traverse-pinion of said stripping mechanism to cause said stripping mechanism to strip the rear flats twice as often as the front flats, as and for the purpose specified.

5. The combination of the top-flats, the cylinder, and the stripping mechanism with the traverse-rack having two branches at its rear end and having a guide pin or tooth arranged between said branches to conduct the traverse-pinion from one branch to the other, said guide-pin and the teeth of said branches nearest said pin being flattened or cut away, as

herein described, on the sides where the teeth of said pinion leave said pin, to allow said pinion to be disengaged from said pins in passing from one to the other of said branches, said traverse-rack and its branches being adapted to be engaged by the traverse-pinion to cause said stripping mechanism to strip the rear flats twice as often as the front flats, as and for the purpose specified.

6. The combination of the top-flats, the cylinder, the stripping mechanism, and the traverse-rack having two branches at its rear end, said rack being provided with a guide-flange extending around said rack and between said branches, a guide pin or tooth arranged between said branches opposite the inner end of that part of said guide-flange which lies between said branches, said traverse-rack and its branches being adapted to be engaged by the traverse-pinion of said stripping mechanism to cause said stripping mechanism to strip the rear flats twice as often as the front flats, with a spring arranged between one of said branches and the guide-flange between said branches, and adapted to be pushed aside by the arbor of said traverse-pinion while said traverse-pinion is passing said spring and to spring out after said arbor has passed by said spring and to prevent said pinion from returning past said spring, as and for the purpose specified.

In witness whereof I have signed this specification, in the presence of two attesting witnesses, this 17th day of March, A. D. 1887.

ALONZO FALLS.

Witnesses:
ALBERT M. MOORE,
KIRKLEY HYDE.