(Model.) 2 Sheets—Sheet 1.

B. OWENS.

STRIKER ATTACHMENT FOR PAPER RULING MACHINES.

No. 346,063. Patented July 20, 1886.

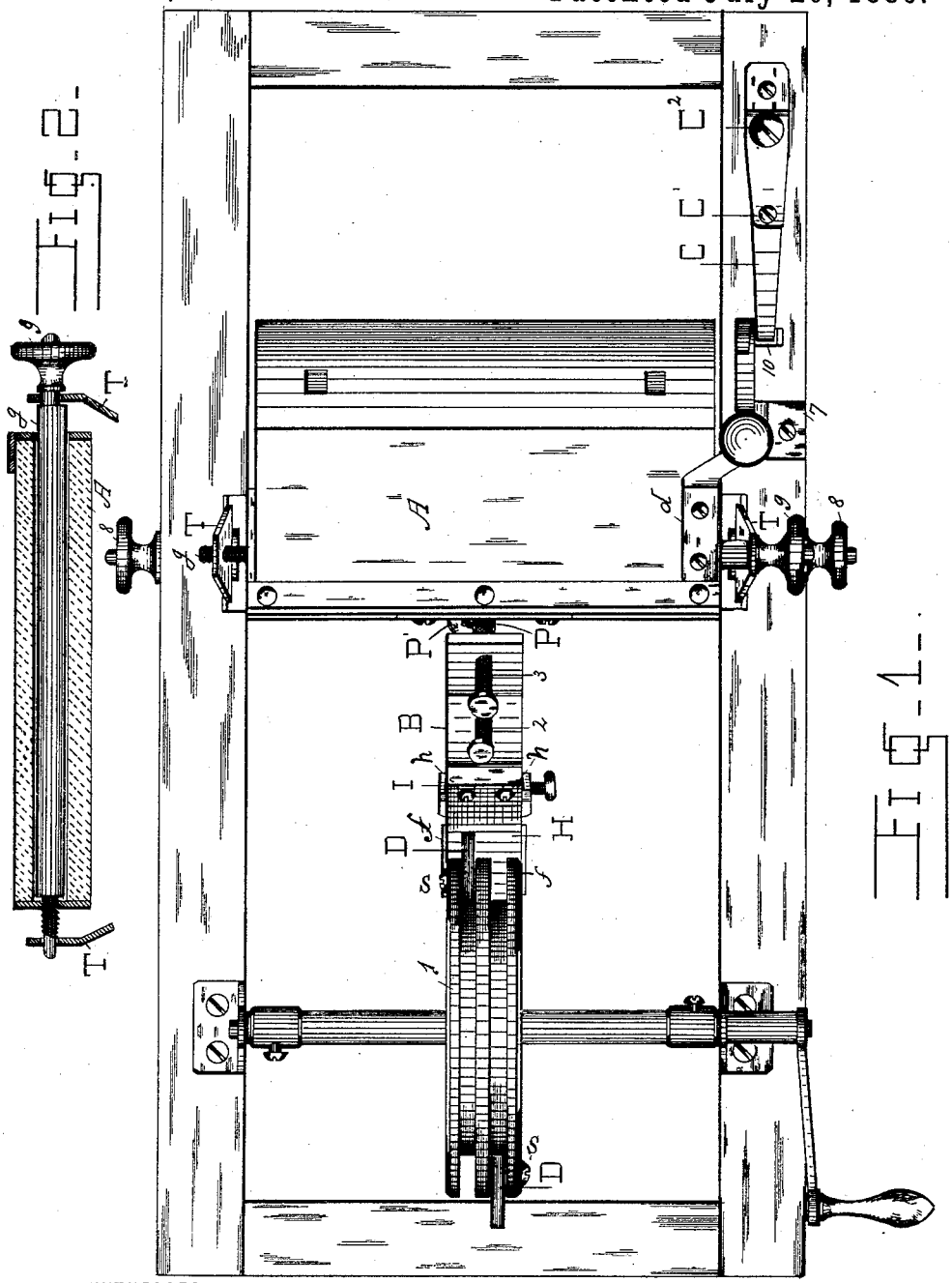

FIG. 1.

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Morris E. Jones
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INVENTOR
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(Model.)

2 Sheets—Sheet 2.

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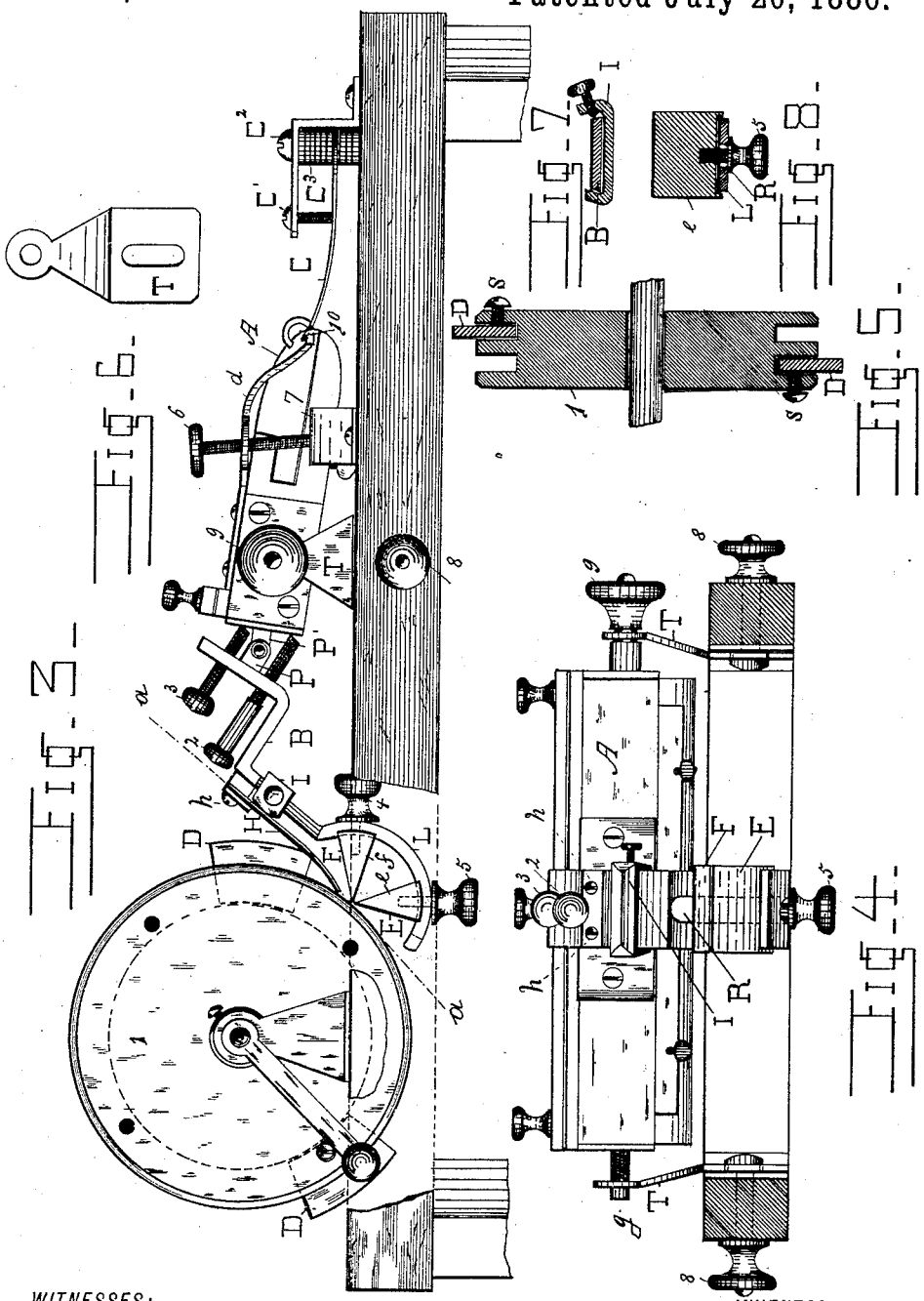

WITNESSES:
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UNITED STATES PATENT OFFICE.

BERNARD OWENS, OF KANSAS CITY, MISSOURI.

STRIKER ATTACHMENT FOR PAPER-RULING MACHINES.

SPECIFICATION forming part of Letters Patent No. 346,063, dated July 20, 1886.

Application filed October 17, 1885. Serial No. 180,179. (Model.)

To all whom it may concern:

Be it known that I, BERNARD OWENS, of Kansas City, county of Jackson, and State of Missouri, have invented certain Improvements in Striker Attachments for Paper-Ruling Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making a part of this specification.

This invention relates to the usual paper-ruling machines, in which the paper is carried by an endless web and a stop-gate determines the feed of the paper thereon, and in which adjustable revolving cams, through the agency of a shoe device, in conjunction with a rock (or striking) spring, actuate a rocking pen-beam.

It being often desirable to produce an accelerated or retarded action of the pen-beam in one of its movements (striking or lifting) without affecting the other, one of my objects is to accomplish this end; and having found that a given web-speed should be accompanied by a correspondingly slow or rapid action of the pen-beam, and that a sufficiently rapid action was not obtainable without numerous and well-known difficulties, my other objects are to produce a variable action of the pen-beam (either slow or rapid) to suit any desired web-speed and to remove the obstacles to rapid action. I attain these objects by employing a rock-spring of unusual strength, and by providing in the first part of my invention a shoe device having adjustable planes of contact—viz., a lifting-surface and striking-surface, each having an adjustment independent of the other, by which cam-contact with either may be prolonged or shortened—and in the second part of my invention by providing a buffer-spring device to prevent any injurious jar or shock following the cam action of the pen-beam.

In the drawings I have omitted the feed-determining and paper-carrying mechanism, which may be of the usual or any suitable description, and have shown only the parts involved in pen-beam actuation, these being sufficient to show my invention.

Figure 1 is a top view or plan illustrating my invention. Fig. 3 is a side elevation of the same. Fig. 4 is a view in the line *a a*, Fig. 3. Fig. 2 is a vertical section (transversely) of a pen-beam, supporting-shaft, and bearings. Fig. 6 is an elevation of the pen-beam bearings. Fig. 5 is a section longitudinally of the cam-wheel. Figs. 7 and 8 are detail views showing the adjustment of the dog I upon the cam-arm B, and planes E F upon the segmentary projection L.

The cams D D may be adjusted within the circumferential grooves of the cam-wheel 1 by the screws S S, and may revolve by the usual or any suitable means.

A is a rocking pen-beam, which may rock on a shaft, *g*, supported by adjustable bearings T T.

B is the cam-arm, which may have rigid connection with the pen-beam and an adjustment relative to the cams D D by the hinge-connection P P and screws 2 3.

d is the pen-rest, which, by a screw, 6, and dog 7, limits the stroke or descent of the pen-beam A.

C is a rock (or striking) spring, which, by a screw, C′, and annular rings C^3, may bear more or less heavy upon a projection, 10, from which it is removable, of the pen-rest *d*, its function being to rock the pen-beam in one direction, (to strike,) the opposite movement (lift) being accomplished by the revolving cams D D.

E F, Fig. 3, being of like form, (see also Fig. 8,) are the two sections of the shoe. Their adjustment may be upon the concave surface of a segmentary projection, L, of cam-arm B by screws 4 5, moving in a slot, R, Figs. 4 and 8. Said concave surface corresponds to a circle that will allow their bases to be brought toward or from each other, but maintain their thin opposite edges in apposition. Other means that will hold the vertex made by the apposition of the two planes in a fixed relation to the cams, and will allow the planes to have a separate adjustment thereon, may be employed. The function of the lifting-plane F is to vary the speed of the cam effect on the pen-beam, or to delay or hasten cam action, which it will accomplish in proportion as it may be adjusted to present a more or less direct resistance to the cams. The function of the striking-plane E is to direct the momentum developed by the spring action of the pen-beam from the pen-rest to the cams. Under certain conditions it will do so more or less. A slow cam-speed

and strong rock-spring tending to press the surface E too heavily against the receding cams would be improper. Oppositely, a fast cam-speed and feeble rock-spring would not direct the momentum away from the pen-rest nor prevent the well-known jar. In general I adjust both planes E F to produce the desired effect at a given cam-speed, and adjust the rock-spring C to prevent any injurious jar following the spring action of the pen-beam.

H is a buffer-spring. Its one end may be made rigidly fast by screws *h h*, Fig. 4, to the cam-arm B, and it may have adjustable strength by a dog, I, or other suitable means, to prevent any injurious jar following the cam action of the pen-beam.

The adjustment of the cam-arm B by the screws 2 and 3 will be to bring the shoe F E and buffer-spring H far enough into the line of the cams D D to produce the desired stroke or effect, and as the cams D D revolve they will first force the buffer-spring H off from their line of rotation, and by its pressure on the cams D D the force of the rock-spring C will be so far overcome that the cams D D will in their onward movement easily force the shoe E F off to lift the pen-beam A. By the further movement of the cams D D the buffer-spring H, ceasing to press upon the cams, will allow the rock-spring C to exercise its full force to produce the opposite (striking) movement of the pen-beam A.

Having thus described my invention, what I claim is—

1. In a ruling-machine, the combination, with the pen-beam A, rock-spring C, and revolving cams, of the plane F and the segment L, substantially as described.

2. In a ruling-machine, the combination, with the pen-beam, rock-spring, and revolving cams, of two contact planes or blocks adjustably secured upon the pen-beam-operating arm, substantially as shown and described.

3. The combination of the pen-beam A, the operating-arm B, the segment L, contact planes or blocks E and F, adjustably secured to the segment, and the cam-wheel carrying adjustable cams, as D D, substantially as shown and described.

4. In a ruling-machine, the combination, with the pen-beam A, the rock-spring C, and the revolving cams D, of the operating-arm B, the segment L, the contact-planes E and F, adjustably secured to the segment, and the spring H, all arranged substantially as described, to govern the movements of the pen-beam.

5. In a ruling-machine, the combination, with the pen-beam, rock-spring, and revolving cams, of a buffer-spring secured to the pen-beam-actuating arm, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

BERNARD OWENS.

Witnesses:

MORRIS E. JONES,

EUGENE PEARSON.