

No. 827,886.

PATENTED AUG. 7, 1906.

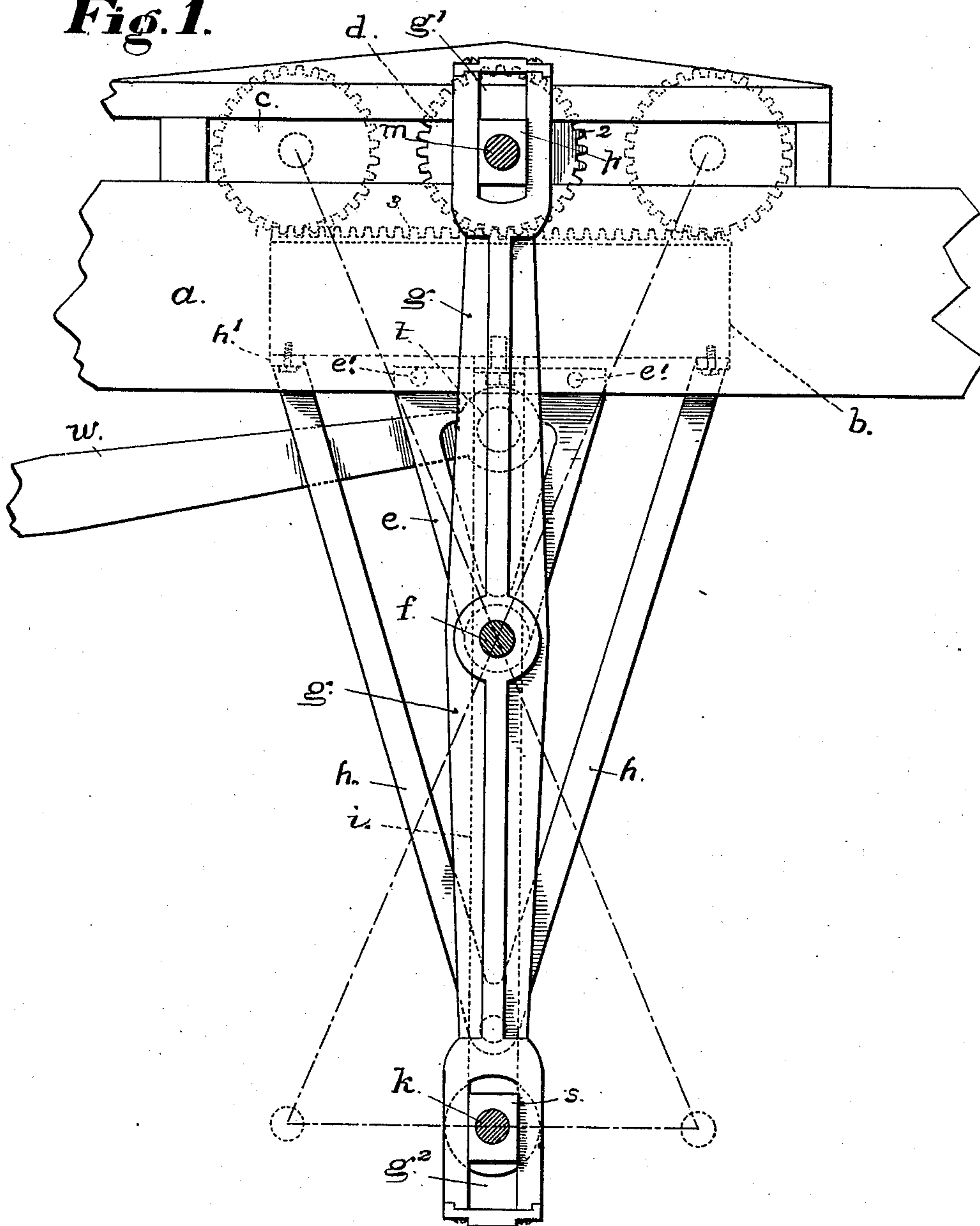
F. P. SHARP & R. C. ANDRUS.

PRINTING PRESS.

APPLICATION FILED MAR. 9, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES.

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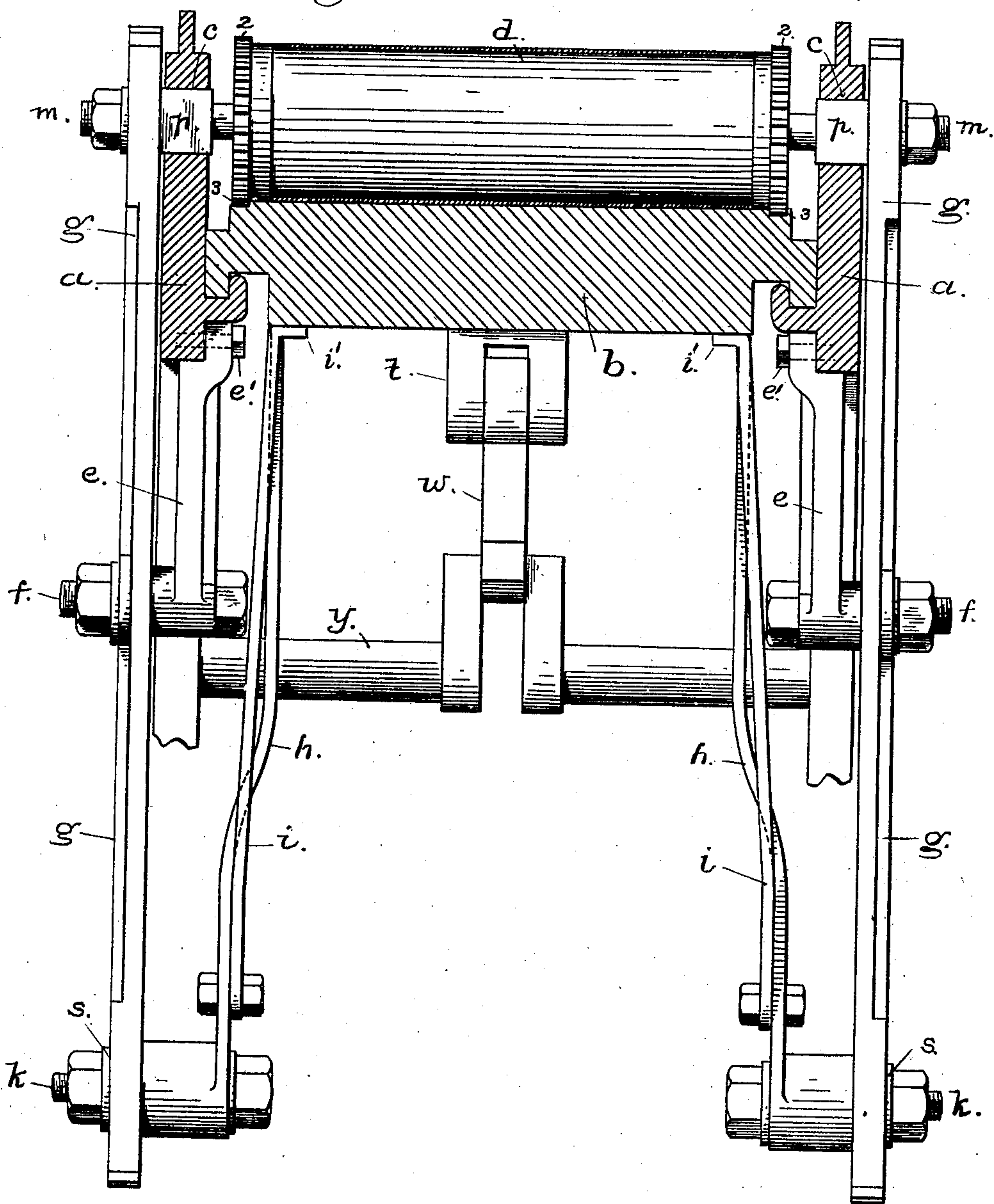
F. P. SHARP & R. C. ANDRUS.

PRINTING PRESS.

APPLICATION FILED MAR. 9, 1905.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

FRANK P. SHARP AND RANDOLPH C. ANDRUS, OF SAN FRANCISCO,
CALIFORNIA, ASSIGNORS TO THE HOAG RAPID PRESS COMPANY,
OF SAN FRANCISCO, CALIFORNIA, A CORPORATION.

PRINTING-PRESS.

No. 827,886.

Specification of Letters Patent.

Patented Aug. 7, 1906.

Application filed March 9, 1905. Serial No. 249,272.

To all whom it may concern:

Be it known that we, FRANK P. SHARP and RANDOLPH C. ANDRUS, citizens of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Printing-Presses, of which the following is a specification.

This invention relates to improved means for driving the form-bed and impression-cylinder in a printing-press of that type, character, or description in which the cylinder and the bed travel in opposite directions with a rectilinear reciprocating movement and the cylinder usually receives its rotary motion from the bed.

The object of the invention is to produce reciprocating motion of the cylinder from the movement of the bed without the use of gearing, whereby the press is rendered more nearly noiseless and more easy to operate than where the movement of one reciprocating part is produced from the movement of the other reciprocating part by gears, as well as to secure advantages as more fully set forth hereinafter.

To these ends and objects the invention consists in certain novel parts and combination of parts, producing an improved means or mechanism for imparting reciprocating movement to the cylinder from the movement of the bed, as hereinafter fully described, and pointed out in the claims at the end of this specification.

The accompanying drawings illustrate one application of our invention to a traveling-bed-and-cylinder press and show such portions of the bed-cylinder and other parts as are sufficient to give, in connection with the following detailed description, a clear understanding of the nature and the operation of our invention.

Figure 1 of the drawings is a side elevation representing the bed and cylinder in the middle of the stroke or length of travel, the position of the same parts at opposite ends of the travel being indicated by dotted lines. Fig. 2 is an end elevation of Fig. 1, showing the frame partly in transverse section.

Referring to the drawings, *a* indicates the side rails of the stationary frame of a printing-press in which the form-bed *b* has reciprocating movement imparted to it by driving

mechanism, such as a crank-shaft *y* and a pitman or connecting rod *w*. The portions of the frame supporting the driving-shaft, feed-table, and other parts of the press, as well as those parts themselves that have no special connection with our invention, are omitted.

The impression-cylinder *d* receives its rotary motion from the movements of the bed through the medium of a spur-gear 2, meshing with a rack 3, carried by the bed. This is a well-known means of rotating the cylinder from the reciprocating motion of the bed.

Fixed guides *c* on the stationary frame are provided for the boxes *p*, that carry the gudgeons or journals *m* of the cylinder, and in these guides the cylinder is confined and caused to maintain true parallel motion with relation to the tread of the bed as reciprocating motion is imparted to the cylinder. This last-named motion being always in the opposite direction to the movements of the bed is produced by connecting one end of a rocking lever *g* at each side of the frame to the journal *m* of the cylinder on that side and the other end of the same lever to the bed at a point beyond or on the opposite side of an axis or fulcrum *f*, on which the lever is arranged to swing in a vertical arc. Such center of motion *f* being situated between that end of the lever to which the cylinder-axis is connected and the opposite end which is connected with or to the bed, it necessarily follows that as the bed in its reciprocations carries the lower end of the levers *g* in one direction the cylinder *d*, connected to the upper end of the lever, is caused to travel over the bed in the opposite direction to that in which the bed is moving. The single connection of the power to the bed thus serves or is made to produce the twofold reciprocations of the cylinder and the bed in the required opposite directions in a direct and simple manner.

In the construction which we have represented in the drawings and prefer to employ the pivot *f*, constituting the fulcrum of the lever *g*, on each side is fixed in a hanger *e*, depending from the side rail of the stationary frame, to which it is fastened by bolts *e'*. These hangers can be made parts of the side frames, instead of being separate pieces.

The lower end of the lever *g* is connected

with the bed by means of a depending bar *i*, bolted to the bed at *i'* and carrying fixed in its lower end a stud *k*, on which is a box *s*. The lower end of the lever *g* is slotted, as seen at *g²*, to receive the box *s*, and the latter is fitted to slide in the slot with sufficient movement longitudinally to accommodate the angular movement of the lever. The bar *i* is strengthened by angularly-bent set-braces *h*, which are bolted to the bed at *h'* and united at the lower ends to the bar, so as to form a stiff frame on each side of the bed. We consider this to be the simplest and most direct manner of connecting the levers *g* to the bed *b* to be moved by it; but we do not intend to limit or restrict the invention to such particular construction of frame on the bed, nor to the particular manner of connecting the power to operate the bed and move the levers *g* in time therewith to give the cylinder the required rectilinear movement in the opposite direction to the bed.

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

1. In a printing-press, a form-bed, an impression-cylinder, means for reciprocating the form-bed, means for producing rotation of the impression-cylinder from the reciprocations of the form-bed, and means for producing reciprocating movement of the impression-cylinder in the opposite direction to the movement of the form-bed, comprising levers of the first order fulcrumed on the stationary frame of the press, and means connecting the said levers to the form-bed on one side of the fulcrum and the impression-cylinder to the levers on the opposite side of the fulcrum.

2. In a printing-press, the combination with a reciprocating form-bed, and an impression-cylinder, of means for producing rotation of the cylinder from the movements of the form-bed, and means for producing reciprocation of the impression-cylinder and the form-bed in opposite directions, comprising levers fulcrumed on the stationary frame of the press, means connecting the form-bed to said levers on one side of their fulcrums and the impression-cylinder to said levers on the opposite side of the fulcrums, a driving-shaft, and means connecting the form-bed with the driving-shaft to impart thereto reciprocating movement from the rotation of the shaft.

3. In a printing-press, a stationary frame, a reciprocating form-bed, oscillating levers

fulcrumed on the frame on opposite sides thereof, a traveling impression-cylinder connected to said levers on one side of their fulcrums and adapted to travel in a rectilinear path over and with reference to the form-bed, means for reciprocating the form-bed, and means connecting the oscillating levers to the form-bed on the side of the fulcrums opposite to that on which the impression-cylinder is situated, whereby the impression-cylinder is reciprocated in an opposite direction to the form-bed by the same means that reciprocates the form-bed.

4. In a printing-press a stationary frame, a reciprocating form-bed, a rotating impression-cylinder, and means for reciprocating the impression-cylinder in the opposite direction to the form-bed comprising oscillating levers fulcrumed on the stationary frame on opposite sides thereof, means connecting the impression-cylinder to the said levers on one side of their fulcrums, and the form-bed to the said levers on the opposite side of their fulcrums, and means for oscillating the levers.

5. In a printing-press, the combination of a stationary frame, a reciprocating form-bed, a crank-shaft, means operatively connecting the form-bed to the crank-shaft, an impression-cylinder adapted to reciprocate in a path parallel with the form-bed, means for rotating the impression-cylinder from the movements of the form-bed, and means connecting the impression-cylinder with the form-bed comprising oscillating levers on opposite sides of the stationary frame movable in a vertical arc, means connecting the form-bed to the lower ends of said levers, and means connecting the journals of the impression-cylinder to the upper end of said levers, the center of oscillation of said levers being situated between the points of attachment of the bed and cylinder thereto, whereby reciprocating movements of the bed and cylinder in opposite directions to each other are produced.

In testimony whereof we have hereunto signed our names in the presence of two witnesses.

FRANK P. SHARP.
RANDOLPH C. ANDRUS.

Witnesses:

EDWARD E. OSBORN,
M. REGNER.