

(No Model.)

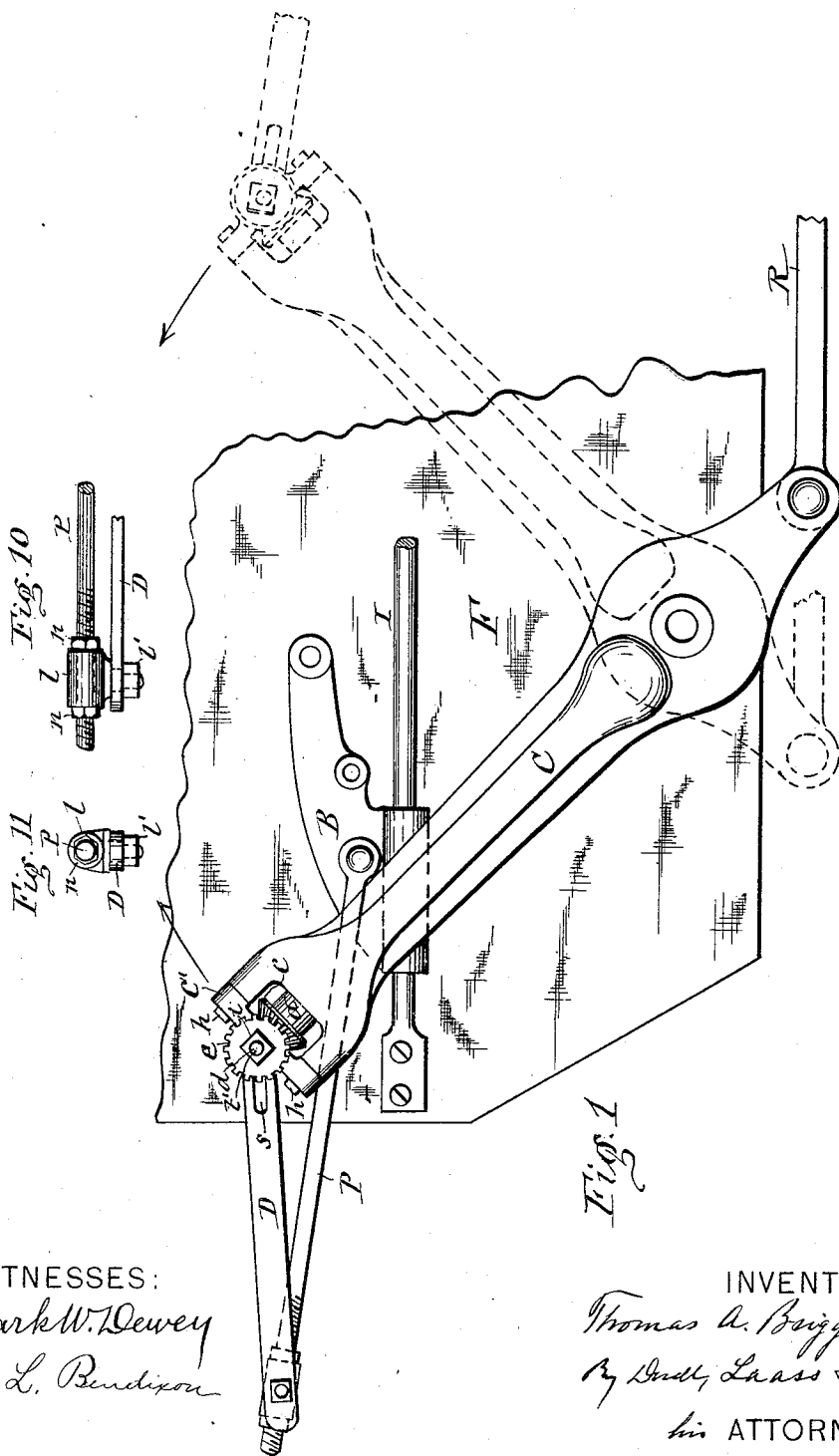
2 Sheets—Sheet 1.

T. A. BRIGGS.

DEVICE FOR CONVERTING OSCILLATORY INTO RECIPROCATING MOTION.

No. 480,449.

Patented Aug. 9, 1892.



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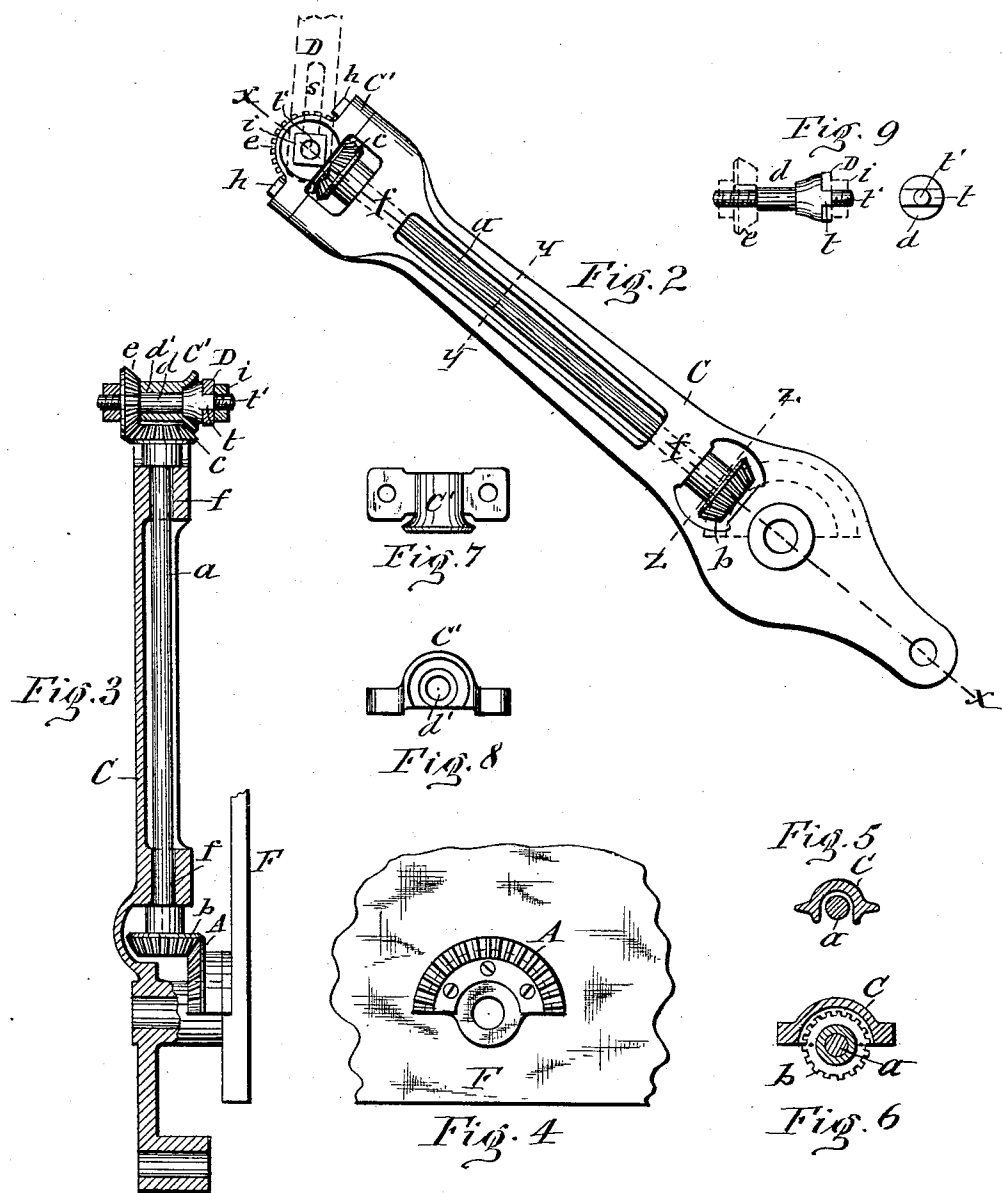
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WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS A. BRIGGS, OF ARLINGTON, MASSACHUSETTS.

DEVICE FOR CONVERTING OSCILLATORY INTO RECIPROCATING MOTION.

SPECIFICATION forming part of Letters Patent No. 480,449, dated August 9, 1892.

Application filed November 24, 1891. Serial No. 412,991. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. BRIGGS, of Arlington, in the county of Middlesex, in the State of Massachusetts, have invented new and useful Improvements in Devices for Converting Oscillatory into Reciprocating Motion, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

15 This invention relates to mechanism for converting oscillatory motion into reciprocating motion and is employed in the paper-feeding machine for which I have prepared an application for United States patent of even date herewith; but I do not limit this present invention to such use, as it is obvious that it is also adapted to be applied to other machines.

The invention consists, essentially, in the combination of a stationary segmental gear, a rock-arm pivoted to the center of said gear, a shaft journaled on said rock-arm lengthwise thereof, pinions on opposite ends of said shaft, one of which pinions engages the aforesaid gear, a shaft journaled transversely to the free end of the rock-arm, a pinion fixed to one end of the transverse shaft and engaging the outer pinion of the longitudinal shaft, and an arm fixed to the opposite end of the transverse shaft, all as hereinafter more fully described, and specifically set forth in the claims.

In the annexed drawings, Figure 1 is a side view of my invention, shown in two of its operative positions. Fig. 2 is a rear face view of the rock-arm and mechanism connected thereto. Fig. 3 is a longitudinal section on line *xx* in Fig. 2. Fig. 4 is a face view of the stationary gear. Figs. 5 and 6 are transverse sections, respectively, on lines *yy* and *zz* in Fig. 2. Figs. 7 and 8 are respectively plan and front views of the cap, which is detachably connected to the free end of the rock-arm. Fig. 9 is a detail view of the transverse shaft. Fig. 10 is a top plan view of the pivotal connection of the pitman with the arm, which transmits motion from the rock-arm to the pitman, and Fig. 11 is an end view of the same.

Similar letters of reference indicate corresponding parts.

A represents a stationary beveled segmen-

tal gear, which is bolted or otherwise rigidly secured to the frame F of the paper-feeding machine or other machine requiring the conversion of oscillatory motion into reciprocating motion. To the axial center of said gear is pivoted the rock-arm C, which receives oscillatory motion by a reciprocating rod R, connected to one end of said arm, as illustrated in Fig. 1 of the drawings, or by any other suitable means, depending on the character of the machine to which my invention is applied. Lengthwise of said rock-arm extends a shaft *a*, which is journaled in suitable bearings *ff* on the rock-arm. To the end of the shaft *a*, adjacent to the gear A, is affixed a bevel-pinion *b*, which engages said gear, as shown in Fig. 3 of the drawings. To the opposite end of the shaft *a* is firmly secured a miter-pinion *c*, which meshes with a corresponding miter-pinion *e*, affixed to a shaft *d*, journaled to the free end of the rock-arm at right angles to the shaft *a*.

For connecting the shaft *d* to the rock-arm C, I prefer to employ a cap *C'*, extended across the free end of said rock-arm and fastened thereto by tap-bolts *h h*, said cap being formed with the transverse journal-bearing *d'*, through which the shaft *d* passes. The pinion *e* is fixed to one end of the shaft *d*, and an arm D is firmly secured to the opposite end of said shaft, preferably by means of a rectangular tongue *t* on the shaft entering a longitudinal slot *s* in the end of the arm D, said slot being of sufficient length to allow the said arm to be shifted longitudinally on the tongue *t*, and thus adjusted to extend a greater or less distance from the rock-arm C and increase or diminish the length of its stroke. A screw-threaded stud *t'* projects from the tongue *t*, and a nut *i* on said stud clamps the arm D in its required position on the end of the shaft *d*.

B represents a slide, which is mounted on a guide I, attached to the frame F. When my invention is applied to an automatic paper-feeding machine attached to a printing-machine, as shown in another application for United States Letters Patent prepared by me and of even date herewith, the said slide carries one end of a transverse shaft, which is provided with grippers and draws thereby the paper over the feed-table to the printing-ma-

chine. This slide is connected to the free end of the arm D by means of the pitman P, and in order to allow this pitman to accommodate itself to different angles in relation to the arm D and slide B, I pivotally connect said parts, and to allow the pitman to be adjusted in length between its connections with the arm D and slide B, I screw-thread the end portion of the pitman and place thereon a sleeve *l*, which is smooth internally and held in position by nuts *n n* on the pitman at opposite ends of the sleeve. From the side of said sleeve projects a stud, which passes through an eye in the arm D and is screw-threaded on its end and provided with a nut *l'*, by which the arm D is retained on the stud.

During the oscillations of the rock-arm C the engagement of the pinion *b* with the stationary gear A causes the shaft *a* to be rotated alternately in opposite directions, the rotation being reversed with the reversing of the motion of the rock-arm. The engagement of the pinion *c* on the opposite end of the shaft *a* with the pinion *e* imparts a rocking motion to the shaft *d*, to which the latter pinion is fastened, and the rocking motion of said shaft imparts an oscillatory motion to the arm D, which is thus caused to positively swing with its free end in the direction in which the rock-arm moves and in advance of said rock-arm, as illustrated in Fig. 1 of the drawings. In this manner the length of the stroke of the pitman P and slide B is greatly increased in comparison with the stroke of the rock-arm C.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the stationary segmental gear A, the rock-arm C, pivoted to the center of said gear, the shaft *a*, extending lengthwise of said arm and journaled thereon, the pinion *b*, fixed to one end of said shaft and engaging the gear A, the miter-pinion *c* on the opposite end of said shaft, the shaft *d*, journaled to the free end of the rock-arm at right angles to the shaft *a*, the pinion *e*, fixed to the shaft *d* and meshing with the

pinion *c*, and the arm D, also fixed to the latter shaft to move therewith, as set forth.

2. In combination with the stationary gear A, the rock-arm C, pivoted to the center of said gear, the shaft *a*, extending lengthwise of said rock-arm and journaled thereon, the pinion *b*, fixed to one end of said shaft and engaging the gear A, the miter-pinion *c*, fixed to the opposite end of said shaft, the cap *C'*, attached to the free end of the rock-arm and provided with the journal-bearing *d'* at right angles to the shaft *a*, the shaft *d*, extending through said journal-bearing, the pinion *e*, fixed to one end of the latter shaft and meshing with the pinion *c*, and the arm D, fixed to the opposite end of the shaft *d*, substantially as described and shown.

3. In combination with the guide I and slide B, mounted thereon, the stationary gear A, the rock-arm C, pivoted to the center of said gear, the shaft *a*, journaled on said arm lengthwise thereof, the pinion *b*, fixed to said shaft and engaging the gear A, the pinion *c*, fixed to the opposite end of said shaft, the shaft *d*, journaled to the free end of the rock-arm at right angles to the shaft *a*, the pinion *e*, fixed to one end of shaft *d* and meshing with the pinion *c*, the arm D, fixed to the opposite end of the shaft *d*, and the pitman P, pivotally connected to the free end of the arm D and to the slide B, substantially as described and shown.

4. In combination with the rock-arm C, longitudinal shaft *a*, transverse shaft *d*, and pinions transmitting motion from the longitudinal shaft to the transverse shaft, the arm D, connected longitudinally adjustable to the transverse shaft to regulate the thrust of said arm, as set forth.

In testimony whereof I have hereunto signed my name this 16th day of November, 1891.

THOMAS A. BRIGGS. [L. s.]

Witnesses:

WILLIAM H. H. TUTTLE,
ARTHUR W. SIM.