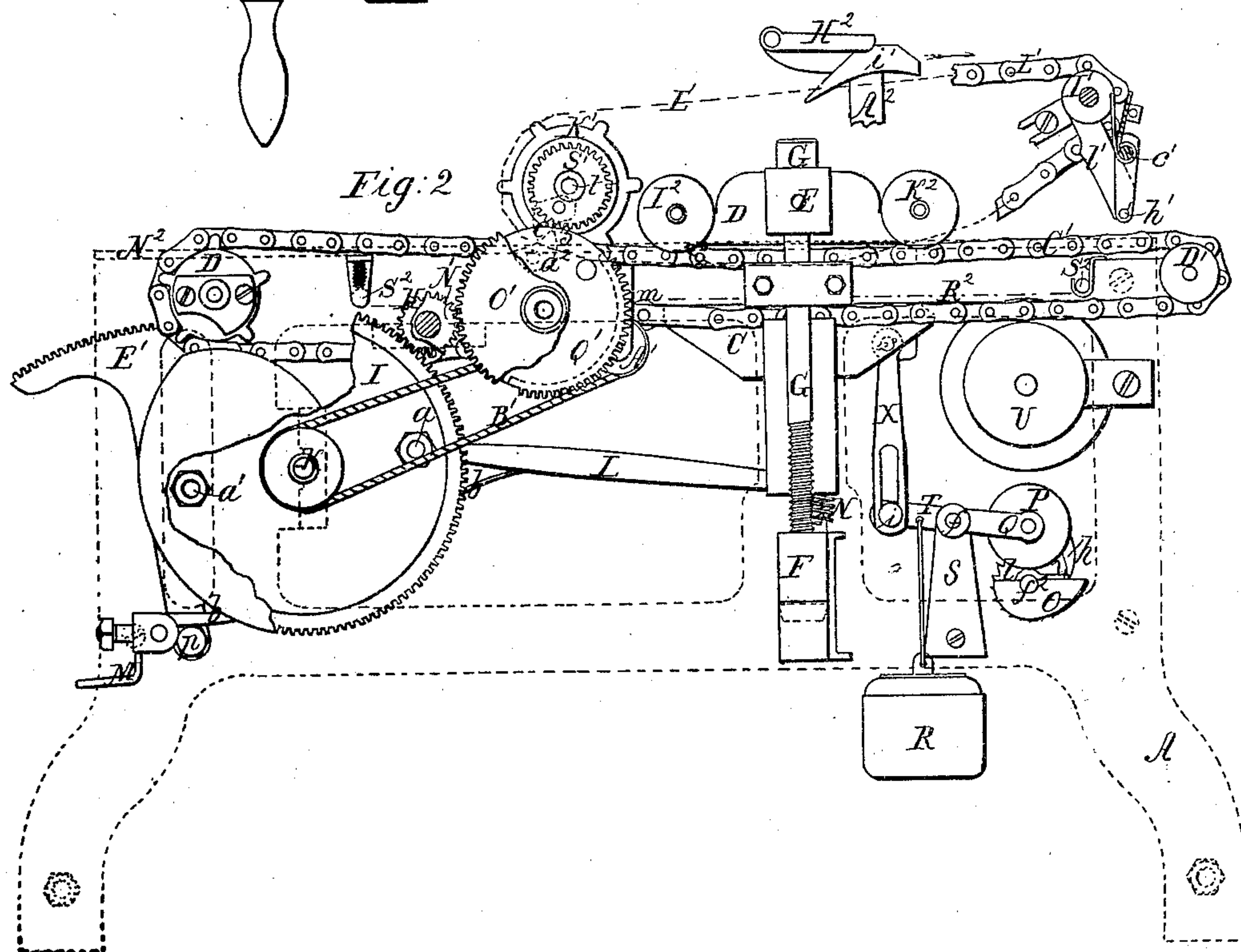
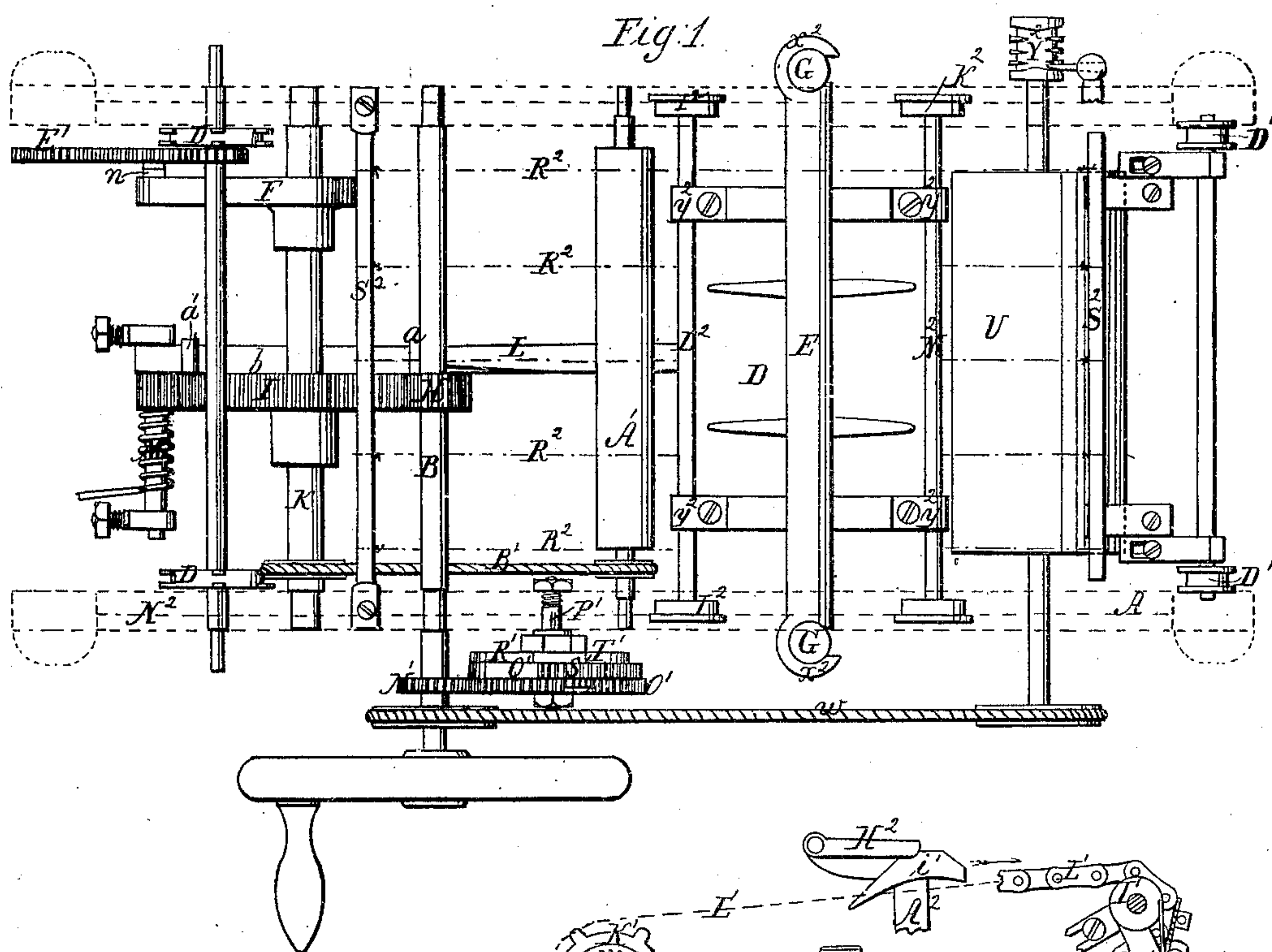


Sargent & Keach. Printing Press.

Sheet 1-2 Sheets.

N^o 16,221.

Patented Dec. 9, 1856.

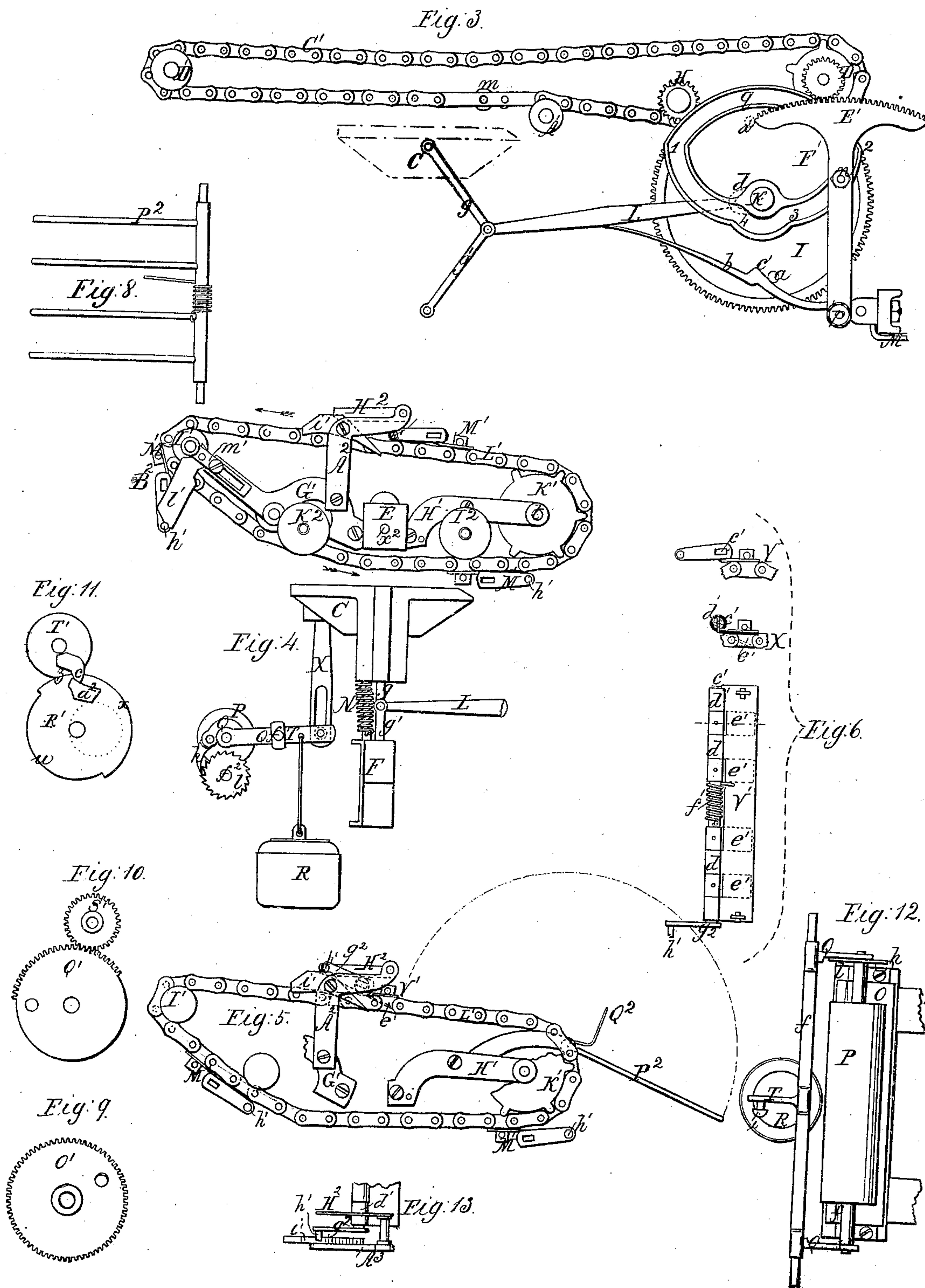


Sargent & Keach. Printing Press.

Sheet 2-2 Sheets.

N^o 16,221.

Patented Dec. 9, 1856.



UNITED STATES PATENT OFFICE.

CHARLES G. SARGENT, OF LOWELL, AND ABRAM KEACH, OF BOSTON,
ASSIGNORS TO SAID KEACH AND CALEB M. MARVEL, OF LOWELL,
MASSACHUSETTS.

IMPROVEMENT IN PRINTING-PRESSES.

Specification forming part of Letters Patent No. 16,921, dated December 9, 1856.

To all whom it may concern:

Be it known that we, CHARLES G. SARGENT, of Lowell, in the county of Middlesex and State of Massachusetts, and ABRAM KEACH, of Boston, in the county of Suffolk and State aforesaid, have invented certain new and useful Improvements in Printing-Presses, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan, certain portions of the machinery being removed to show the parts beneath; Fig. 2, a side view, the frame-work and portions of the machinery being removed; Figs. 3, 4, 5, 6, 8, 9, 10, 11, 12, and 13, details, which will be referred to hereinafter.

To enable others skilled in the art to understand our invention we will proceed to describe the manner in which we have carried it out.

In the press to which our improvements are applied the paper is fed to the machine by suitable nippers attached to endless chain-carriers, which receive the paper, carry it beneath the platen, remain stationary while the impression is given, and afterward deliver it to a "fly," by which it is thrown out of the machine, the inking-rolls being carried by a reciprocating endless chain over the types previous to each impression.

In the accompanying drawings, A is the frame-work, B the driving-shaft, C the bed which carries the types and which is operated in the following manner: The platen D is attached to the cross-beam E, which strengthens and sustains it in place. This beam is connected with a similar cross-beam F by the vertical rods G, the lower ends of which are screwed, so that the distance between the cross-beams may be adjusted as required. A pinion H upon the driving-shaft B actuates the wheel I, from one side of which project the pins a a' , which alternately strike against the end of the pitman L and close the toggle g g' , by which the form is raised against the platen. This is effected in the following manner: b is a lever of the form represented in Figs. 1 and 3, which is kept elevated by the spring M, except when not otherwise depressed, and which at certain periods sus-

tains and guides the pitman L. As the wheel I revolves the pin a depresses the lever b , Fig. 3, and the pitman is thus allowed to drop until the pin arrives at the point c' , at which instant it enters the fork d of the pitman, and as the wheel I continues to revolve the toggle g g' is closed. This happens when the pins a a' are in the position seen in Fig. 2. By the further revolution of the wheel I the pitman is allowed to return, and the form is depressed by the spring N, Fig. 4. As this takes place the lever b follows the pitman, ready to support it so soon as the pin a leaves the fork d . The other pin then commences to depress the lever, together with the pitman now resting upon it, and on the arrival of this pin at the point c' it enters the fork in the pitman, as before, and the "form" is again raised. This takes place twice for every revolution of the shaft K and wheel I.

The manner in which the types are inked will now be described.

O is the ink-fountain, in which lies the roll f^2 .

P is a feed-roll, which is carried by arms Q, projecting from a horizontal shaft f , pivoted in the standards S, Fig. 2.

T is an arm projecting from the opposite side of the shaft f , from which is suspended the weight R, by means of which the feed-roll P is kept in contact with the ink-cylinder U, Fig. 2. The latter is kept constantly revolving by a band W, driven by a pulley on the main shaft, and is also traversed slowly in a longitudinal direction by the well-known device represented at Y², Fig. 1. The pin i upon the arm T plays in a slot in the lever X, which descends from the bottom of the bed C. When the latter is elevated, the feed-roll P is depressed and brought in contact with the roll f^2 in the fountain. When the bed is depressed, the roll P is raised up against the revolving cylinder U, upon which the ink is distributed. The roll f^2 is caused to make a partial revolution each time the feed-roll P descends, by the pawl h upon the arm Q, which engages with the teeth of the ratchet-wheel l upon the end of the roll f^2 and drives it a short distance. A' is another cylinder driven by a band B' from the shaft K. The ink-rolls m are made to traverse over the sur-

face of the types previous to each impression and to rest alternately upon the cylinders U and A' in the following manner.

C' are endless chains, which run upon the carrying-wheels D D', the former of which is driven in the following manner: E' is a cogged sector, pivoted at *p* and having a pin *n*, which runs in a groove *q* of the cam F' upon the shaft K. The sector E' engages with a wheel α^3 upon the shaft of the wheel D, and motion is thus communicated to the rolls *m* back and forth over the types, the cam F' being so formed that while the pin is in the portion 1 to 2 the roll *m* shall remain in contact with the revolving cylinder A'. From 2 to 3 the roll crosses the types. From 3 to 4 it again remains stationary upon the opposite side of the form and in contact with the cylinder U while an impression is given, and while the pin is in the portion 4 to 1 of the groove the ink-roll again traverses over the types back to the cylinder A'. The types are thus inked previous to each impression.

The manner in which the paper is carried through the machine by the feed-nippers and endless chain will now be described.

The arms G' H', attached to the platen D, carry the wheels I' K', upon which runs the endless chain L', to which are secured the nippers M'.

N' is a pinion upon the driving-shaft B, which engages with and drives the cogged wheel O', Fig. 1, upon the short shaft P'. In Fig. 2 the wheel O' is broken away to show the wheel Q', which is attached to it. This wheel has teeth upon only one-half of its circumference, and is seen detached in Fig. 10. Immediately back of this wheel is a plain wheel R, the two portions of the circumference of which are of different radii, as seen in Fig. 11. Above this collection of wheels and engaging therewith in a manner which will be presently explained is another set upon the shaft *t* of the carrying-wheel K'. The first of these wheels S' engages with the wheel Q', Fig. 10, by which means the endless chain L' is driven intermittently in the direction of the arrows, Figs. 2 and 4. Back of the wheel S' is the plain or holder wheel T'. While the wheel S' is driven by the wheel Q' the concentric portion of T' runs opposite to the portion *w* of the wheel R', and when the plain portion of the wheel Q' is passing the gear S' the concave portion *z* of the plain wheel T' rests upon the portion *x* of the wheel R', and the shaft *t* and chain L' are held thereby immovable.

a^2 is a toe upon the rear side of the wheel R', which strikes, as it revolves, a similar toe *e* upon the rear side of the wheel T' and revolves the shaft *t* and chains L' slightly at the moment when the nippers require to be operated, by which a portion of them are opened and others closed, as will hereinafter be more fully explained.

The carrying-nippers are seen in end view, section, and plan in Fig. 6. The plate V', at-

tached to the chain L', forms the upper jaw of the nippers.

c' is a shaft, which revolves freely in eyes *d'* upon one side of the plate V'.

e' (seen dotted in the plan, Fig. 6) are the lower jaws of the nippers, which are secured by pins or otherwise to the shaft *c'*. The nippers are retained closed when not otherwise opened by the spring *f'*. Attached to the shaft *c'* of the nippers is the arms *g'*, having at one end a projecting pin *h'*.

A² is a standard, which rises from the arm G' and carries the guide-piece *i'*, up the inclined surface of which the pin *h'* rises, as seen in Figs. 5 and 13, by which means the jaws are opened at the moment required to open and release the printed sheet.

H² is an arm, also attached to the standard A², which prevents the chain from rising when the pin *h'* is carried up by the inclined plane *i'*.

At the point B², Fig. 4, the nippers are opened for the purpose of receiving the sheet by the stationary guide-piece *l'*, up which the pin *h'* rides at the required moment.

For the purpose of keeping the chain L' tight the bearings *m'*, in which the carrying-wheels I' run, are connected with the arms G' by means of a slot and pin, as seen in Fig. 4, and in order that the platen D may not be in the way when it is necessary to change the form it is moved together with the parts immediately connected therewith from over the bed in the following manner.

I² K² are rollers or wheels attached to shafts L² M², which run in boxes *y'*, attached to the platen. These wheels run upon ways N² upon the top of the frame-work. When the platen is to be thus removed, the pin α^2 is withdrawn, which frees the cross-beam E from the rods G and allows the platen to travel off on its ways.

As the nippers M' come round, they revolve the fly P² over upon the chain L' and beneath the sheet of paper which they carry. On arriving at the point represented in Fig. 5 the nippers are opened and the paper is released. The next instant, as the chain continues to advance, the plate V' passes from off the fly, which is immediately carried over by its spring Q² and the printed sheet is deposited upon a table or other suitable receptacle.

R² are the frisket-cords attached to the transverse rods S².

There are three sets of carrier-nippers attached to the chains L', so that for each entire revolution of the chains three impressions are taken.

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

1. The within-described method of operating the bed by means of the pins *a a'* and the forked lever L when the motion of the latter is controlled by the spring-lever *b*, arranged in the manner substantially as herein set forth.

2. The wheels Q' S' R' T', constructed as described and operating, in combination with

the toes e and a^2 , in the manner set forth, whereby the nipper-chain is fed intermittently and at the required moment receives a slight motion forward for the purpose of opening one set and closing another set of the nippers, in the manner specified.

3. The within-described method of hanging and arranging the nipper-chain L' and the platen D upon the wheels I^2 and K^2 and ways

N^2 , whereby the platen may be moved out of the way when it becomes necessary to change the form, as set forth.

CHAS. G. SARGENT.
ABRAM KEACH.

Witnesses:

SAM. COOPER,
P. E. TESCHEMACHER.