(No Model.)

3 Sheets—Sheet 1.

A. J. BRADLEY.

STENCIL MACHINE.

No. 494,546.

Patented Apr. 4. 1893.

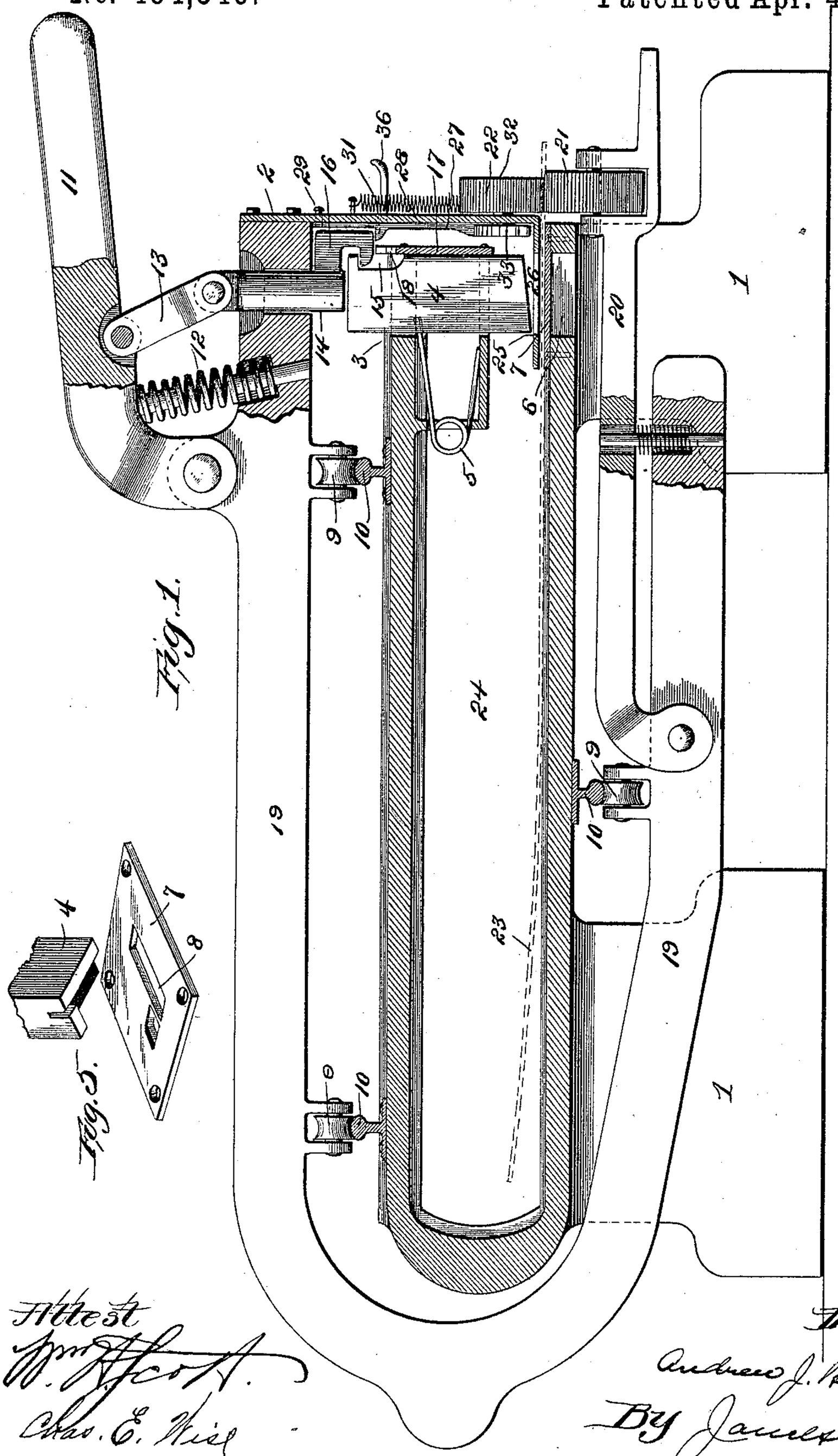

Fig. 1.

Fig. 5.

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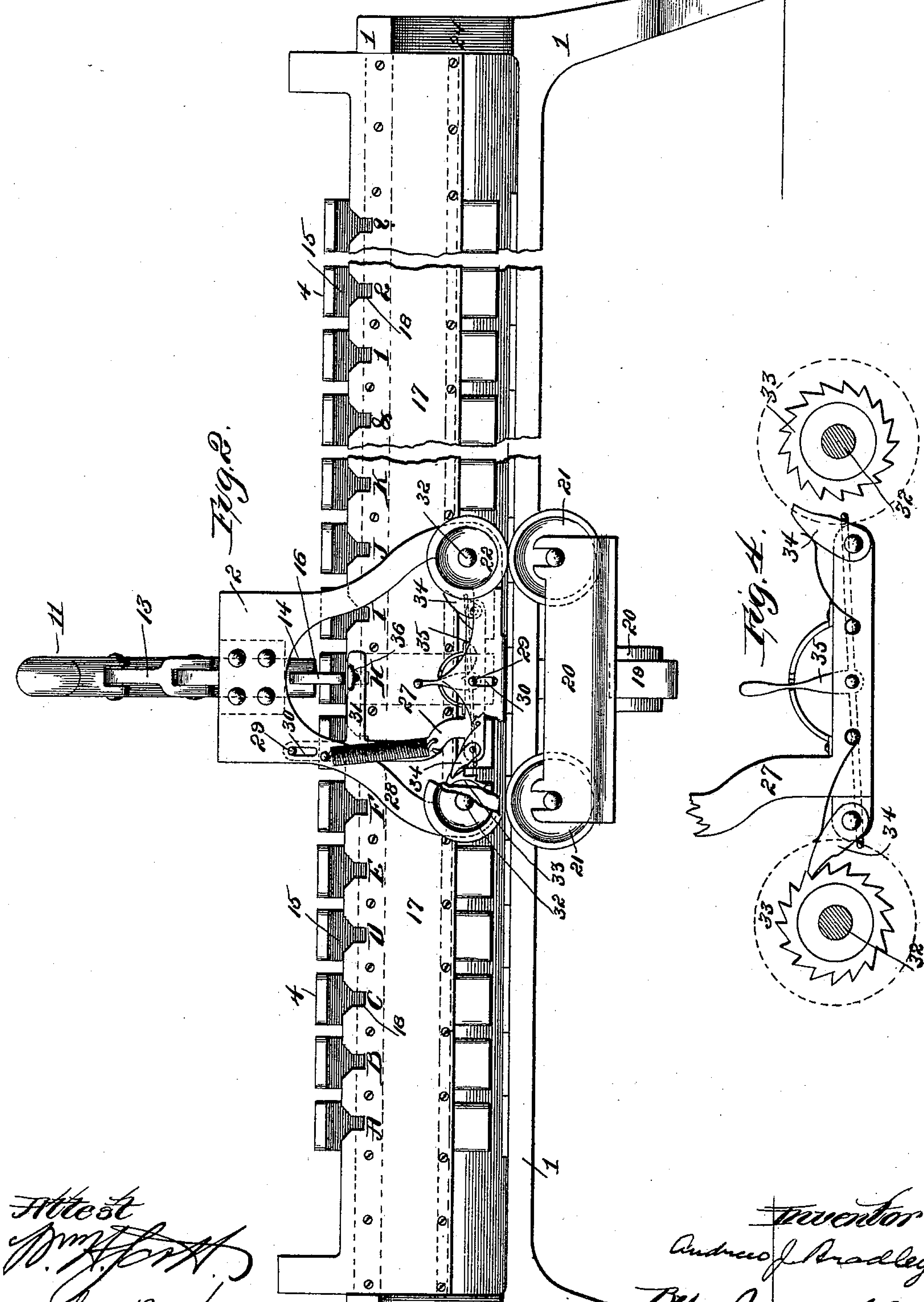

Fig. 2. Fig. 4.

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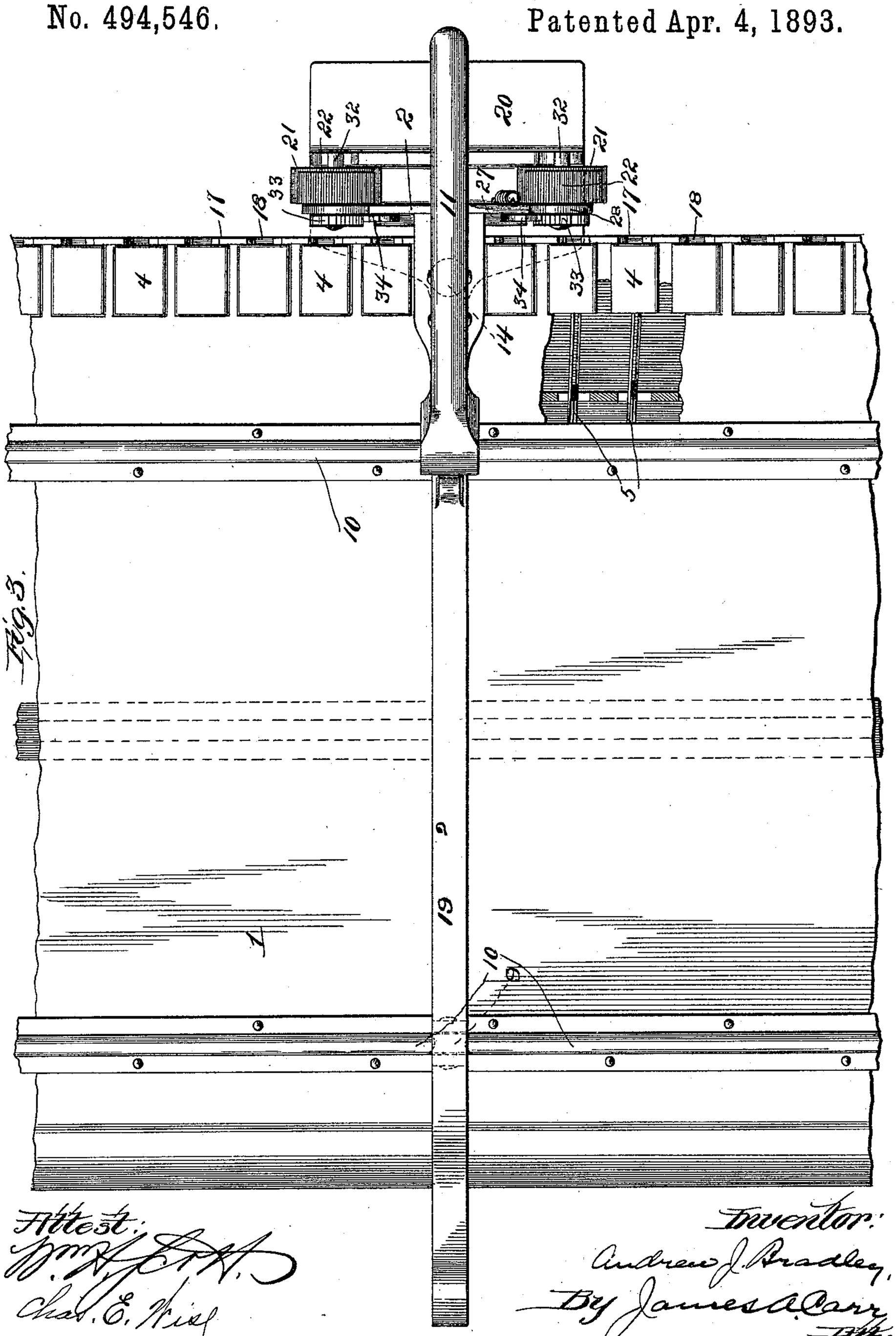

Fig. 3.

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UNITED STATES PATENT OFFICE.

ANDREW J. BRADLEY, OF ST. LOUIS, MISSOURI.

STENCIL-MACHINE.

SPECIFICATION forming part of Letters Patent No. 494,546, dated April 4, 1893.

Application filed May 31, 1892. Serial No. 434,938. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. BRADLEY, a citizen of the United States, residing in the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Stencil-Machines, of which the following is a specification.

My invention relates to stencil machines, and has for its object to produce a machine whereby proper characters may be cut or punched in suitable plates or blanks, for the purpose of making stencils, shipping brands and like articles.

My invention consists in the construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a transverse vertical sectional view of the machine. Fig. 2 represents the front elevation of the machine. Fig. 3 is a plan view of part of the machine with a small portion of this part shown in section. Fig. 4 is a detail sectional view of the feed mechanism, the plane of section passing between the ratchet wheel and the feed rollers, and the rollers being shown in dotted lines. Fig. 5 is a detail view of a pair of male and female dies.

The main framework, 1, of the machine is preferably fixed or stationary, and is provided with a suitable number of dies conveniently located thereon. A movable carriage, 2, travels upon guides on the framework, and carries a plunger for operating the dies and also a feed mechanism for determining the proper position of the blank to be operated upon.

The main frame, 1, is provided in its upper portion with a series of openings, 3, arranged in line and preferably along the edge of the frame. In each of these openings, 3 is a male die or punch, 4, held in its upper position by a spring, 5. These springs permit of a downward movement of their respective dies or punches upon the application of a force to said dies and automatically lift said dies to their upper positions when the force or pressure is removed. As shown in the drawings, the spring, 5, may be a horizontal helical wire having one end projecting to extend into the die or punch, and the other end bearing downwardly against a fixed projection from the main frame. Directly below the male dies or punches and in line with the springs, 3, in the upper portion of the main frame, are openings, 6, also in the main frame. Each of these openings, 6, is provided with a cap or covering plate, 7, preferably of steel, rigidly fastened to the main frame. These caps or covers, 7, constitute the female dies or counterparts, and are provided with holes, 8, extending therethrough, the edges of which are of any desired outlines, but preferably each opening is the shape of a particular letter or figure, and the lower end of the corresponding male die has the same outline as the opening, and is of such a size that it barely enters said opening in the female die. The edges of the dies are sharp and the lower surface of the male dies is inclined so that in the downward movement of the dies, one end will reach the edge of the counterpart and then only a small portion of the edges of the pair of dies will be in the same plane at any one time. By this construction, the blanks are cut as by shears rather than punched, so that the edges of the stencil are clean and clear.

The movable carriage or carrier, 2, is provided with rollers, 9, which fit on guides or rails, 10, on the stationary frame. Pivoted to the upper portion of this carriage, is a hand lever, 11, normally held in its upper position by means of a spring, 12, bearing against said lever at one end and against said carrier at the other end. Pivoted to the other side of the handle is a link, 13, whose other end is pivoted to a plunger, 14. This plunger fits and moves in an opening through the carrier, said opening being so located that the plunger is directly above the line of dies. Each male die has a notch, 15, in its side and the punch has a hooked projection, 16, which extends from its side and engages the notch in the die immediately below it. In case the dies should fit so tight that the die spring, 5, should not be strong enough to lift the die, the upward movement of the plunger with its hooked projection will insure the return of the die to its proper position. This projection also serves as an indicator and guide for determining the position of the carriage. For this purpose a face plate, 17, is fastened to the stationary frame, provided with a char-

acter or other indicating device in front of each die to designate the particular character which that die cuts. This face plate has its upper edge provided with notches or guide openings, 18, of a depth and width to permit free downward movement of the plunger projection. The upper portion of the opening is wider than the lower and has its sides inclined so that when the plunger is approximately in position, its downward movement will cause the projection to strike against the inclined side on which it slides, carrying with it the carriage, until it reaches the proper position. The inclined portion of the notch is of such a height that the projection registers with the straight portion before the die reaches the blank. The movable carriage also has a device for holding the blank in position and a mechanism for automatically feeding the blank so that successive characters will be cut at the proper points. The carrier has a portion, 19, which extends down below the dies and is provided with a pivoted lever, 20, held upward by the pressure of a spring which bears upward against said lever. The outer end of the lever is forked and each fork is provided with a roller, 21, preferably corrugated, whose axis is horizontal and perpendicular to the line of dies. Above these rollers are rollers, 22, which turn on axles journaled to the movable carriage and are preferably corrugated to correspond with the lever rollers. The purpose of this portion of the mechanism is particularly to hold the blank in position. The pairs of corrugated rollers are separated by depressing the pivoted lever, and the blank, 23, to be operated upon is inserted between the pairs of rollers, the lower portion of the fixed rollers being arranged to be lower than the lower edge of the male dies in their normal position, and slightly higher than the female dies. The frame should have an open space, 24, extending backwardly a considerable distance from said dies, to admit of operating on the edge of a large plate, and extending a distance beyond each end of the line of dies so as to permit any part of such plate to be moved under all the dies. The frame shown in the drawings is **C**-shaped in cross section and open at each end; and the dies are arranged along the open side.

In order to insure that the blank will not be displaced by the die, the carrier is provided with a depending plate bent inwardly so that the bent portion, 25, will be below the male dies; and in line with the punch is an opening, 26, in said bent portion large enough to allow the largest die to pass through. When the die cuts the blank, this plate prevents the blank from becoming displaced.

A reversible feed mechanism is provided on the movable carrier as shown in Figs. 2 and 4. This feed mechanism consists of a vertically movable frame, 27, normally held in an upward position by a spring, 28, fast to the movable carriage. The frame, 27, is provided with pins, 29, which pass through slots, 30, in the carriage, the ends of the slots being the limits of movement of the frame. This frame has an arm, 31, fixed thereto, and extending into the path of the projection of the plunger, so that when the plunger is depressed, the frame is lowered. On the axles, 32, of the upper corrugated rollers, are respectively a right and a left ratchet wheel, 33. Spring pressed pawls, 34, are pivoted on the lower portion of the movable frame in positions to engage said ratchet wheels respectively. A lever, 35, pivoted at its center to said frame, and having its ends bent under said pawls respectively, lifts one pawl or the other out of engagement with its ratchet according as it is tilted one way or the other. This lever has a handpiece which fits and is locked in notches in a piece fast to the movable frame. The downward movement of the frame lowers the pawl which is pressed into engagement with the teeth of the wheel and the upward movement of the frame causes the ratchet wheel to turn its corrugated roller, and thereby move the plate forward a space. A handle, 36, is provided for spacing independent of the plunger.

The operation of the machine is as follows: The lever, 20, is depressed to separate the corrugated rollers, between which the blank to be operated on is inserted, and adjusted in such a position that the point where the first character is to be cut will be directly below the plunger. The lever is then released and the carriage is moved by means of the handle, 11, until the projection from the plunger is above the character indicated on the face plate. The hand-lever is then depressed, driving the plunger down and with it the male die which cuts the blank like a pair of shears, and also carrying down with it the movable frame of the feed mechanism. When the pressure on the hand-lever is relieved, the hand-lever rises, with the punch, being either lifted by its particular spring, or by the projection from the punch. The spring, 28, raises the movable frame, 29, which thereby causes one or the other of its pawls to turn the corresponding ratchet wheel, according to the way the lever is tilted. The turning of the ratchet wheel rotates its corrugated roller, which moves the blank one space so as to present a new surface for the next operation. The feed mechanism thus automatically determines the space to be cut for the next character, and so for each succeeding character.

The particular advantages of this machine are its simplicity of construction and operation, and the compact arrangement of its dies.

What I claim as new, and desire to secure by Letters Patent, is—

1. A machine comprising a main frame having a series of corresponding male and female dies, a movable carriage on said frame and a plunger on said carriage over said male dies whereby it is adapted to act successively upon

all the male dies of the series and a reversible feed mechanism on said carriage, substantially as described.

2. A machine comprising a main frame having a series of corresponding male and female dies, a movable carriage on said frame, pairs of separable rollers secured to said carriage, and means for holding the rollers of a pair against each other and an independently acting feed mechanism for said rollers, substantially as described.

3. A machine comprising a main frame having a series of corresponding male and female dies, a movable carriage on said frame, a lever pivoted to said carriage, and rollers on said lever and rollers journaled to said carriage, cooperating with the rollers on said lever, and provided with reversible feed mechanism, substantially as described.

4. A stencil machine comprising a main frame having a series of corresponding male and female dies, a movable carriage on said frame and a plunger on said carriage whereby it is adapted to act on all the male dies of the series, and pairs of separable rollers secured to said carriage, and means for holding the rollers of a pair together, the axle of one of said rollers having a ratchet wheel fixed thereto, a frame on said carriage movable independently of said plunger and carrying a pawl for engaging said ratchet wheel, said frame being in the path of said plunger and provided with a retracting device, substantially as described.

5. A feed-mechanism consisting of a carriage, a frame movably secured thereto, and a retracting device therefor, two pairs of rollers journaled to said carriage, right and left ratchet wheels fixed on the axles of one roller of each pair respectively, and pawls on the frame for engaging said ratchet wheels and a lever pivoted on said frame between said pawls and having its ends bent to extend under said pawls respectively, substantially as described.

ANDREW J. BRADLEY.

Witnesses:
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T. PERCY CARR.