

(No Model.)

2 Sheets—Sheet 1.

J. S. COWDERY.
MACHINE FOR THE MANUFACTURE OF CRAYONS.
No. 437,751. Patented Oct. 7, 1890.

Fig. 1.

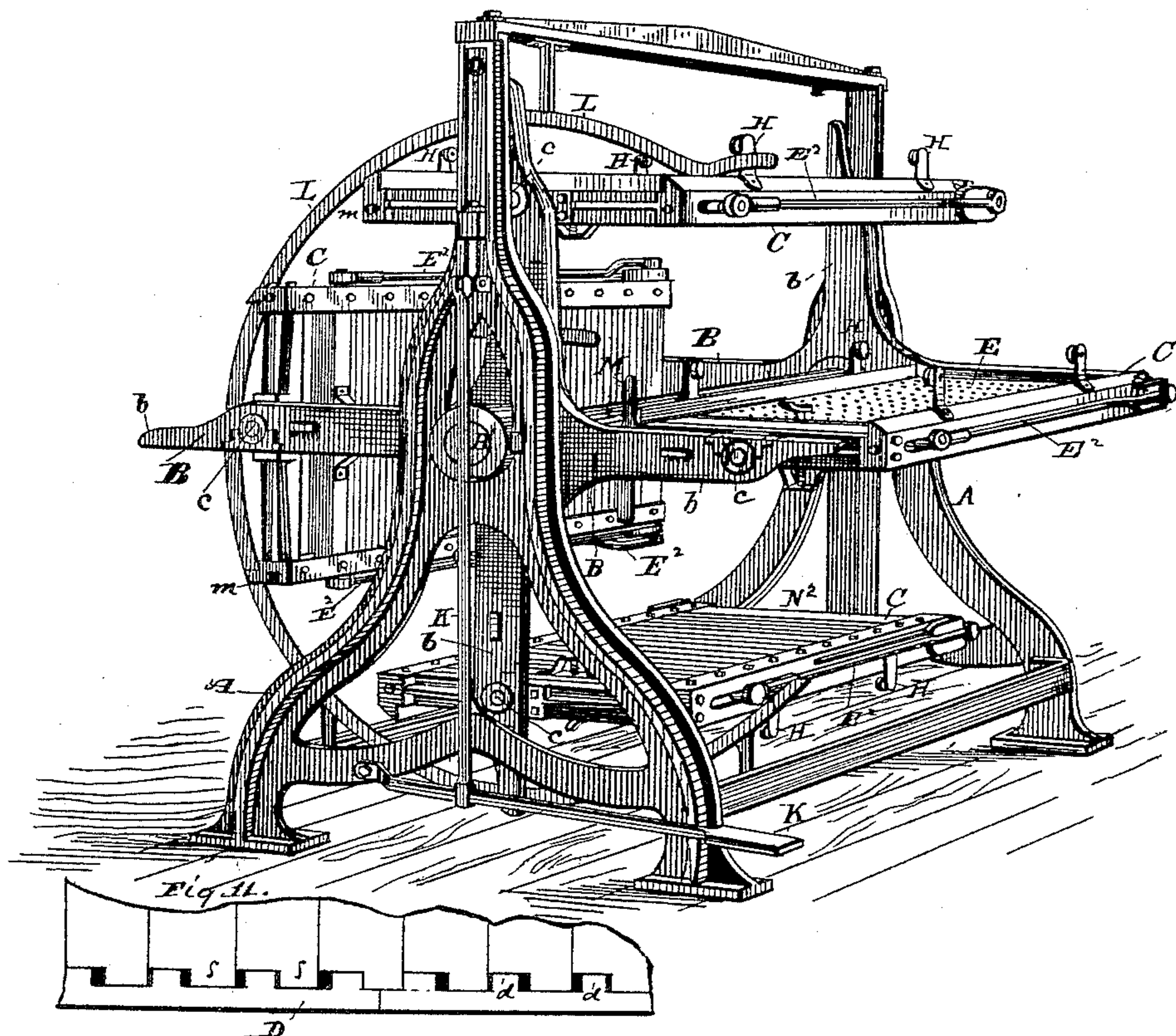


Fig. 2.

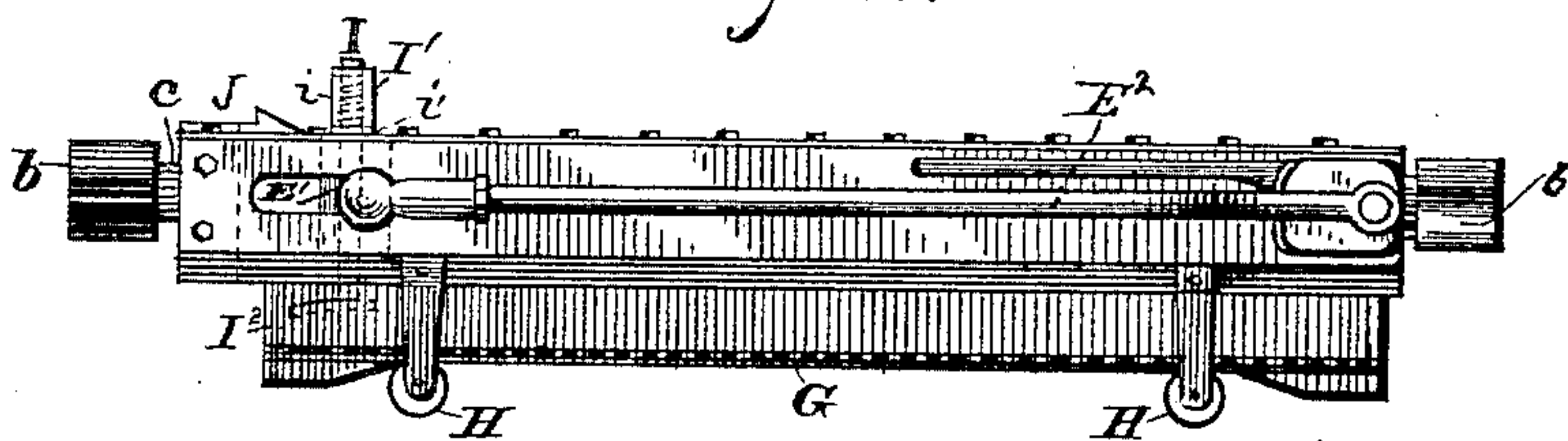
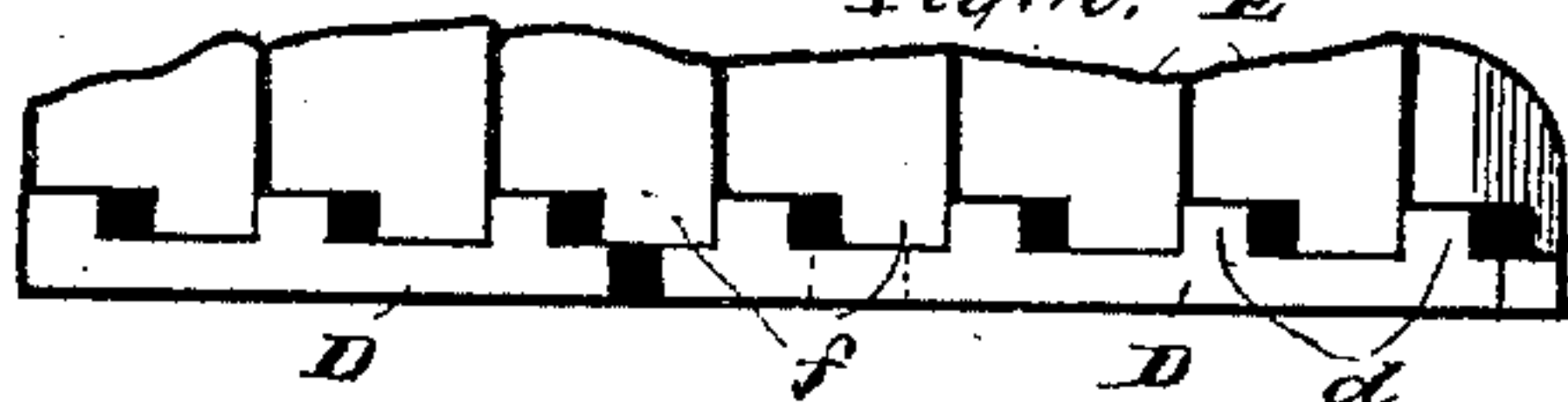


Fig. 10. E



Witnesses

J. D. Fay
C. C. Glass

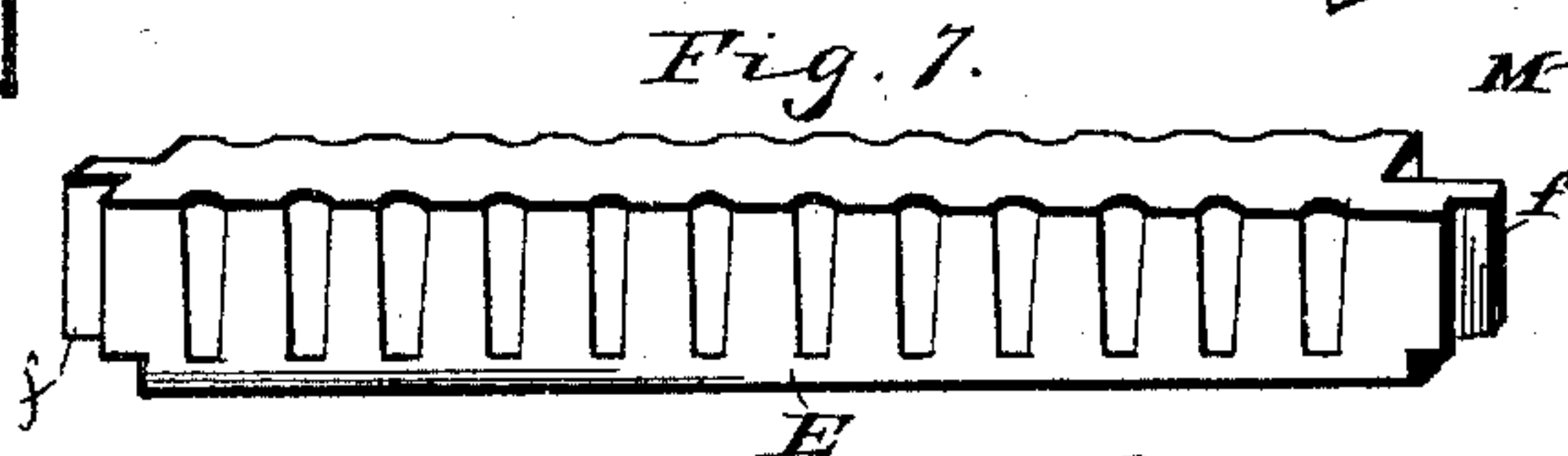
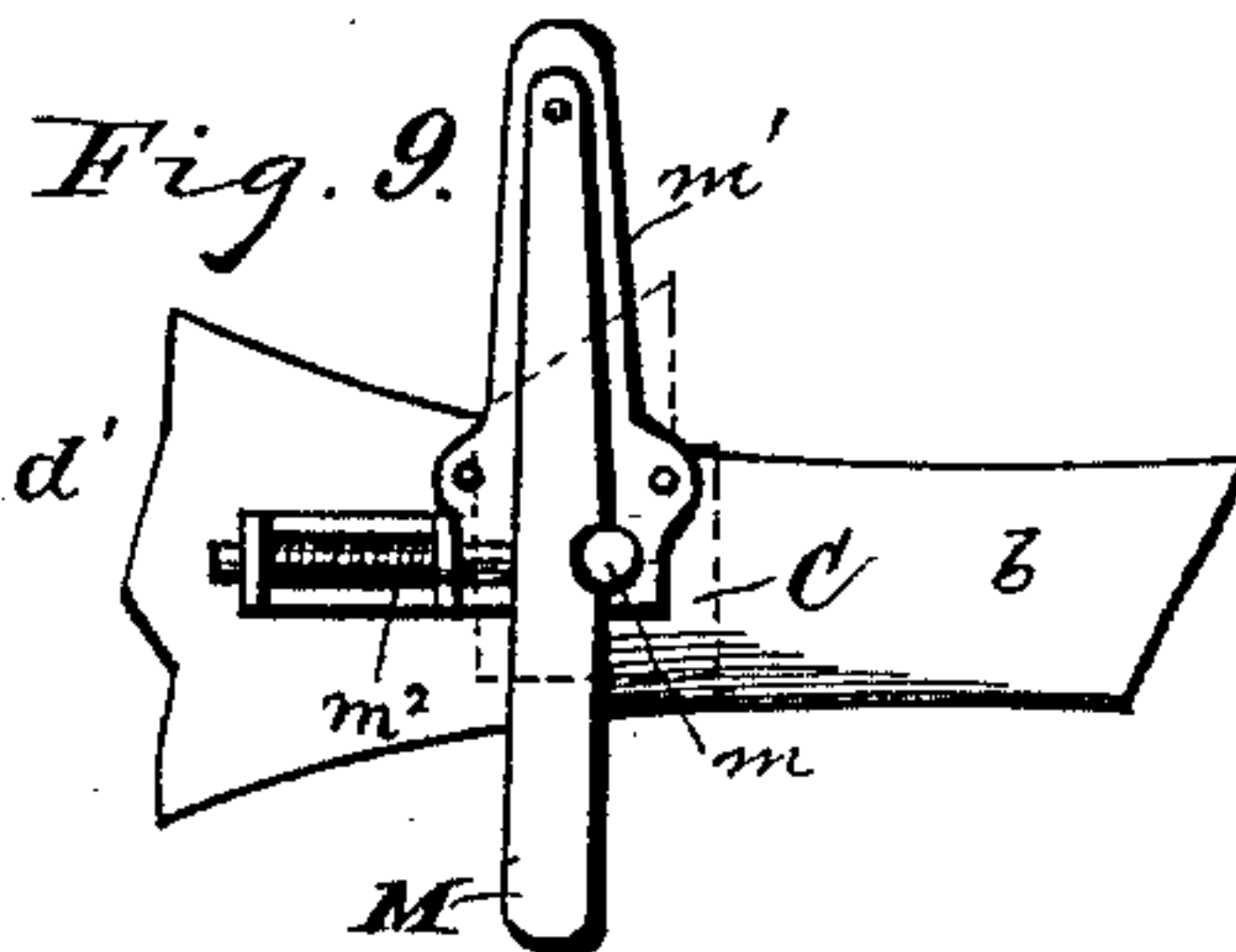
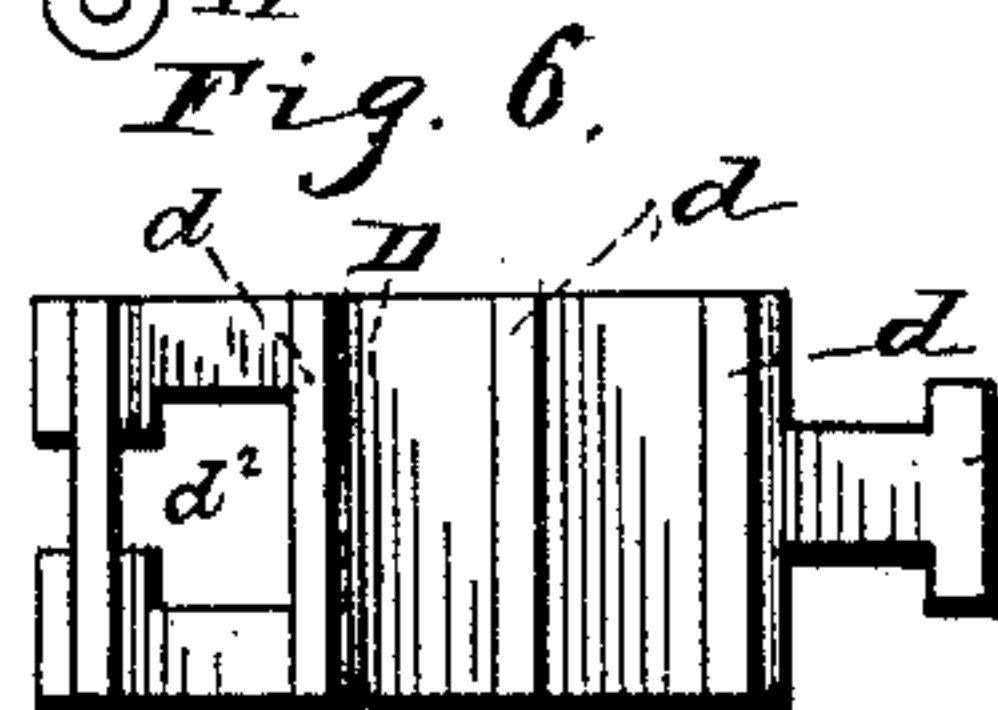
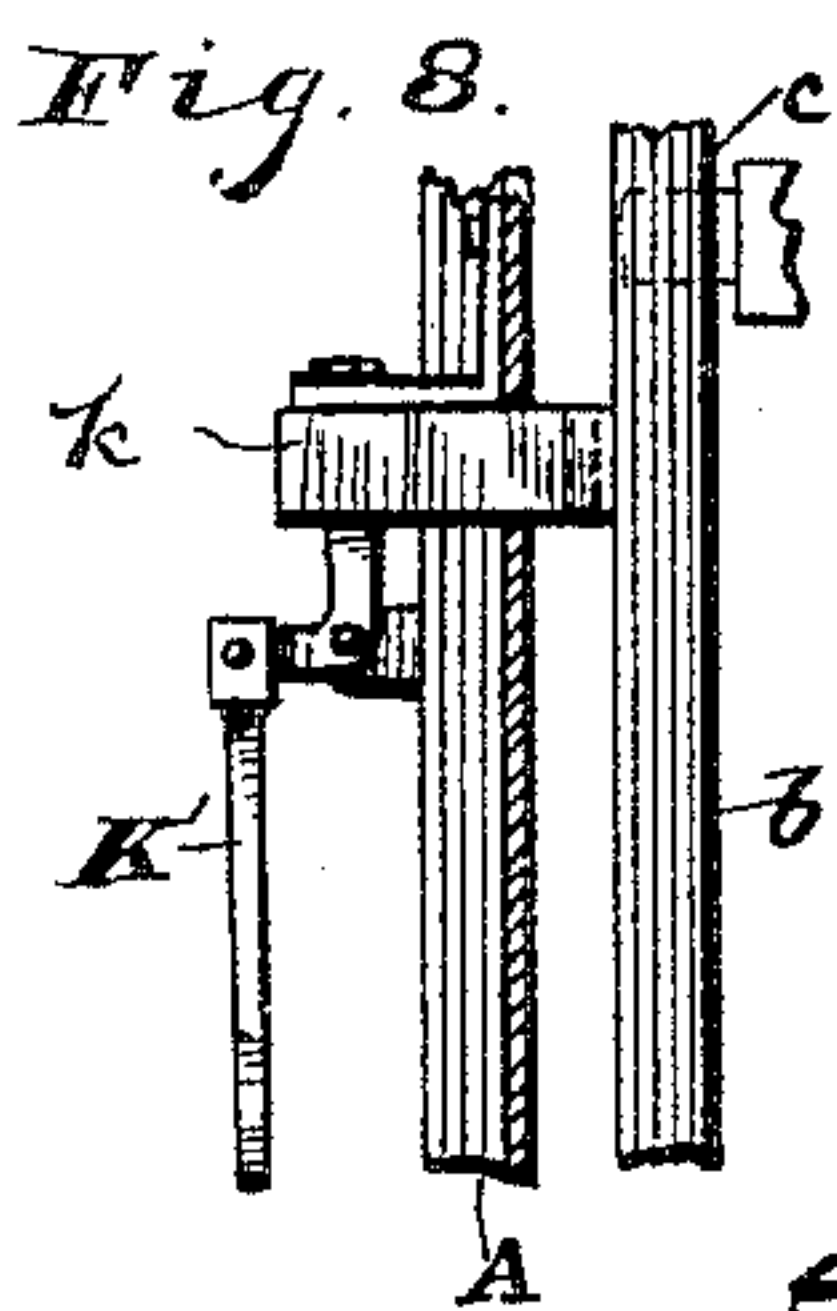
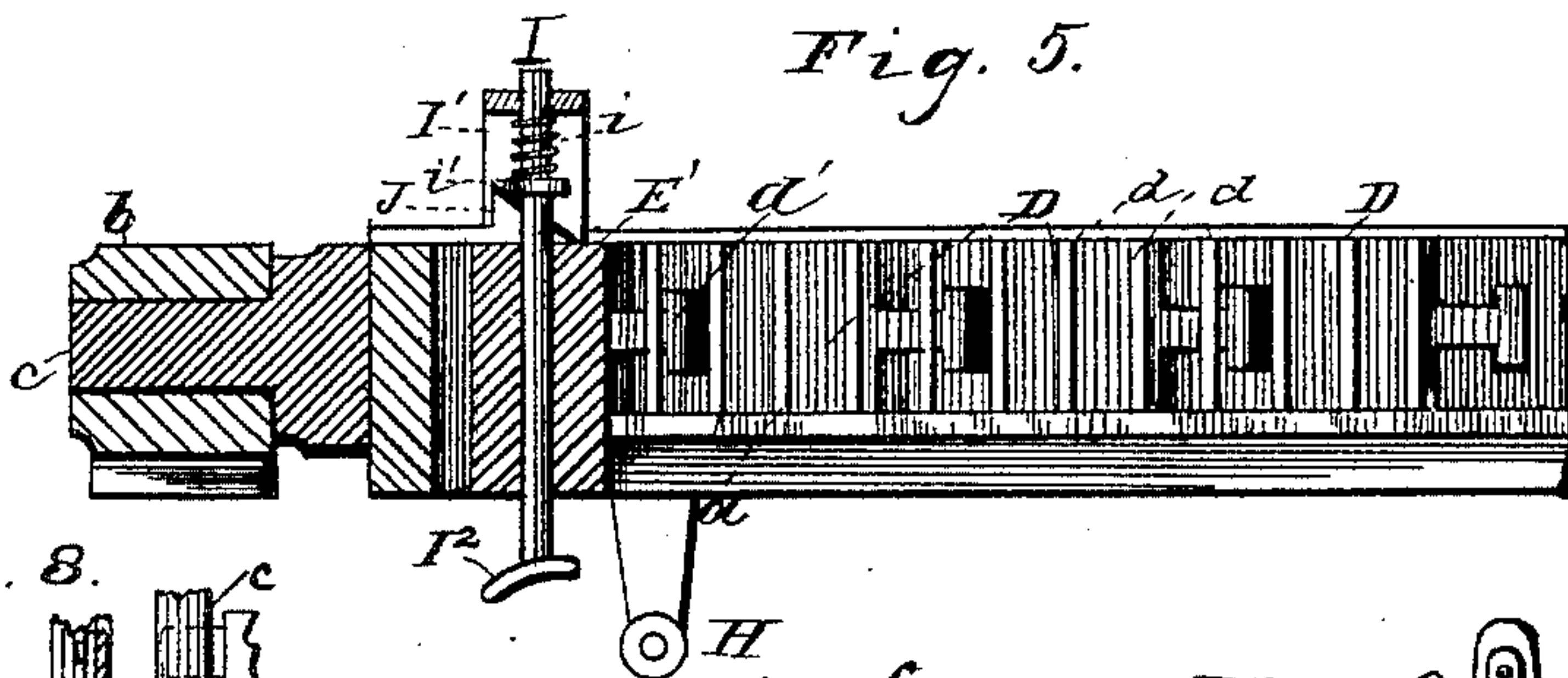
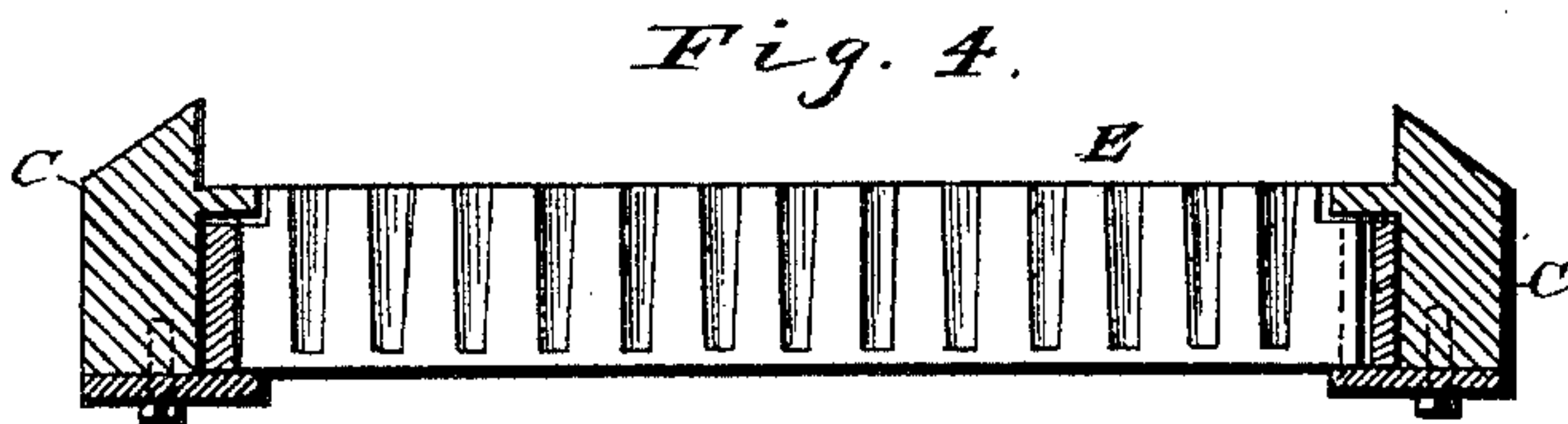
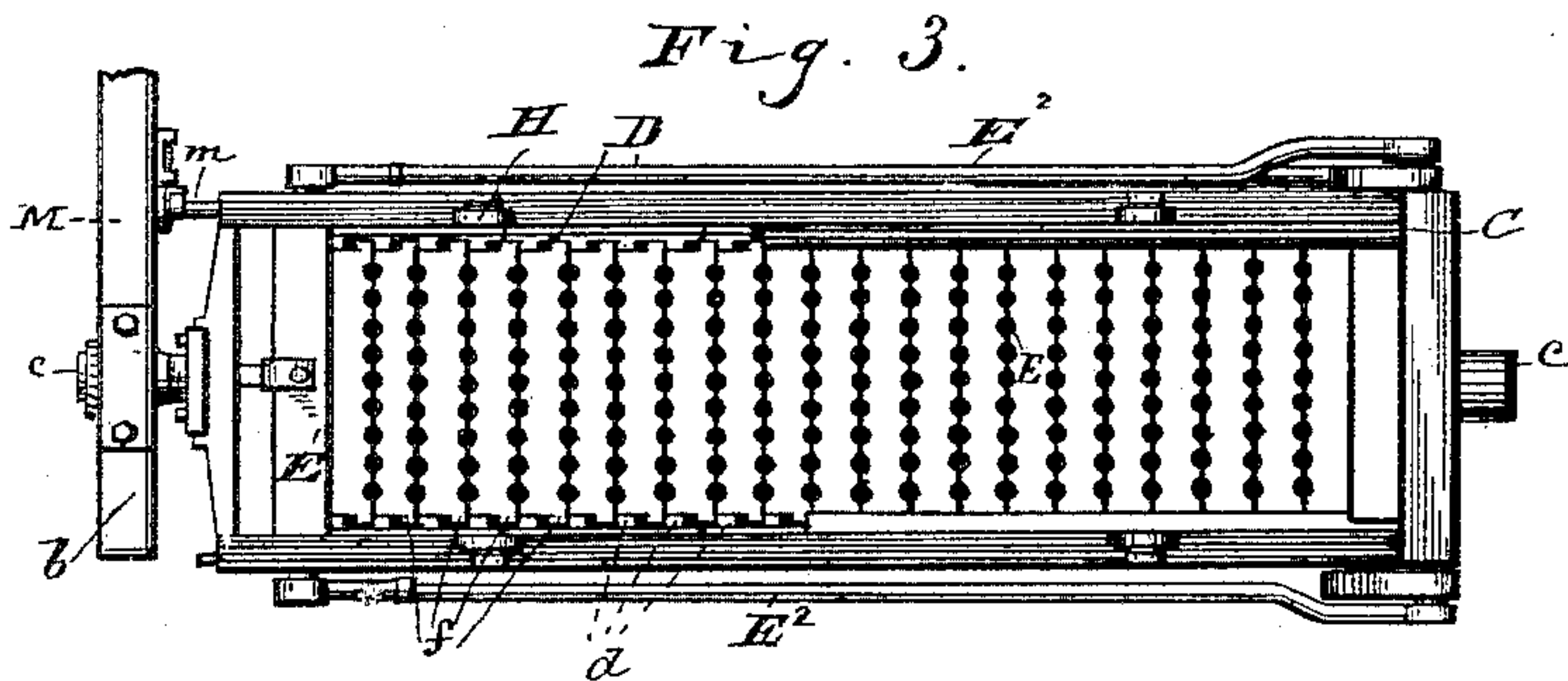
J. S. Cowdery Inventor
By Thos J Hall
Attorney

J. S. COWDERY.

MACHINE FOR THE MANUFACTURE OF CRAYONS.

No. 437,751.

Patented Oct. 7, 1890.



Witnesses
J. D. Fay
C. C. Glaser

Inventor
J. S. Cowdery
By J. H. Hall
Attorney

UNITED STATES PATENT OFFICE.

JOHN S. COWDERY, OF SANDUSKY, OHIO.

MACHINE FOR THE MANUFACTURE OF CRAYONS.

SPECIFICATION forming part of Letters Patent No. 437,751, dated October 7, 1890.

Application filed November 22, 1884. Serial No. 148,635. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. COWDERY, a citizen of the United States, residing at Sandusky, county of Erie, and State of Ohio, have
5 invented certain new and useful Improvements in Machines for the Manufacture of Crayons, Carpenters' Chalk, or other Like Articles, of which the following is a specification, the principle of the invention being herein
10 explained, and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

My invention consists, broadly considered, in the combination of a support, a mold-plate
15 frame, mold-plates fitted in said frame, and mechanism which move the mold-plates relatively to each other within their said frame, said mold-plate frame being journaled on said support on a line parallel with a line passing
20 through different molds of said mold-plates.

My invention consists, more specifically considered in connection with the particular mechanical embodiment of the same, herein-
after set forth, in the combination, with a
25 supporting-frame, and a mold-plate frame journaled therein on a central horizontal axis, of mold-plates loosely fitted in their said frame, and actuating mechanism which move
30 the mold-plates laterally to and from each other within their said frame, said mold-plates having their molds located in respective lines at right angles to said central horizontal axis.

My invention further consists in certain constructions, as hereinafter described and
35 claimed.

Referring to the drawings, which illustrate one mechanical form of embodiment of the principle of my invention, Figure 1 is a perspective of the entire machine. Fig. 2 is a
40 detail showing one of the mold-plate frames in side elevation, with the molds inverted, said mold-plate frame having a crayon-rack in position beneath. Fig. 3 is a detail plan of one of the mold-plate frames with the molds
45 up and closed. Fig. 4 is a detail in vertical cross-section through one of the mold-plate frames, omitting certain connecting parts. Fig. 5 is a detail in vertical longitudinal section of a portion of one of the mold-plate
50 frames, the mold-plates being omitted. Fig. 6 is a detail in inner face elevation of one of the link-hook devices. Fig. 7 is a detail per-

spective of one of the mold-plates. Fig. 8 is a detail of a portion of the device for locking the reel to the stationary frame of the ma-
chine. Fig. 9 is a detail of the device for
55 locking the mold-plate frame to its reel-arm. Fig. 10 is a detail plan showing a portion of a number of mold-plates in open position, together with the link-hook mechanism engag-
60 ing them. Fig. 11 is a similar view to the preceding figure, showing the parts, however, in their relative location when the mold-plates are closed.

The stationary frame A of the machine
65 supports the reel B, said reel being provided with shaft B', having its ends journaled in suitable bearings formed in the two upright sides of the stationary frame. This reel is formed with a series of arms b, which support
70 the respective mold-plate frames C, each said mold-plate frame having central horizontal axial end journals c, which work in bearings formed, respectively, in each of a pair of reel-arms. Each mold-plate frame has located
75 within it two sets of link-hooks D, said two sets being respectively located along the opposite sides of the frame with their inner or working faces in engagement with the ends of the mold-plates E, located between them and
80 at right angles thereto. Each mold-plate has its forward and rear vertical faces respectively provided with half-molds, the counterpart of the article to be molded, the different molds of said mold-plates being located in re-
85 spective lines at right angles to the central horizontal axis about which the mold-plate frame C has rotary movement, said mold-plate frame being journaled on a line parallel with a line
90 passing at right angles through the different molds of the mold-plates fitted in said mold-plate frame. Each link-hook device D is provided on its working-face with a series of
95 shoulders d, which engage with shoulders f formed on the corresponding ends of the corresponding mold-plates. A follower E' is lo-
cated transversely in the front end of each mold-plate frame, and its two extremities working in slotted bearings formed in the side
100 pieces of the mold-plate frame, said follower extremities being respectively pivoted to the two connecting-rods E², which latter extend to the rear end of the mold-plate frame, and are actuated in joint longitudinally recipro-

cating movement by positive connection with
 a suitable cam device. Said cam device and
 connecting-rods operate the follower in slid-
 ing movement to and fro, and the follower has
 5 secured to the front side of each of its two
 extremities a tongue d' , which fits in the open-
 ing d^2 of the link-hook device adjacent there-
 to. The tongue d' of said hook device works
 in the opening d^2 of the next succeeding hook
 10 device, and so on throughout the series of
 hook devices, the tongue of one hook device
 working in the opening of the next succeed-
 ing hook device. Thus each of the two series
 of hook devices located, respectively, along
 15 the opposite sides of each mold-plate frame
 has its several hook devices engaging with
 each other, and also with the mold-plates.
 Each said hook device has longitudinal play
 between its engagement with any two con-
 20 secutive mold-plates, said play being equal
 to the distance desired to move the preced-
 ing mold-plate sufficiently forward to release
 its crayons. Each preceding hook device
 has a longitudinal play before engaging with
 25 its succeeding hook device, said play being
 equal to the distance required to move a mold-
 plate so as to release its molded articles, mul-
 tiplied by the number of mold-plates engaged
 by said mold-plate-engaging device; the di-
 30 mensions of the hook device shoulders and
 the mold-plate shoulders being so propor-
 tioned in relation to each other and the di-
 mensions of the tongues and openings of the
 hook devices being so proportioned in rela-
 35 tion to each other as to cause the respective
 play of said parts, as recited. The different
 mold-plates, loosely fitted in any one mold-
 plate frame, may thus be moved laterally to
 and from each other within their said frames
 40 by said actuating mechanism, while the said
 mold-plate frame is journaled on a central
 horizontal axis within a supporting-frame,
 which axis is in line parallel with a line pass-
 ing through different molds of said mold-
 45 plates. Each mold-plate frame is provided
 with arms H, projecting from the face thereof
 from which the crayons discharge, said arms
 supporting a rack G, adapted to be slid in be-
 neath the mold-plate frame when the crayons
 50 are about to be released, and maintained in
 such position close up to the mold-plates by said
 arms. A bolt I works vertically in a suit-
 able hole formed in the central portion of the
 follower, said bolt provided at one of its pro-
 55 jecting ends with a flange I^2 , which engages
 with the inner side of the front end piece of
 the rack G. The opposite projecting extrem-
 ity of said bolt works in a suitable hole formed
 in a bracket I' , secured to the corresponding
 60 face of the follower. A spiral spring i is fitted
 on said bracket-inclosed portion of the bolt
 between the cross-bar of the bracket and a
 collar i' rigid with said bolt. An inclined
 lug J is secured to the corresponding face and
 65 adjacent portion of the front end piece of the
 mold-plate frame, and by its engagement with
 said collar i' the bolt is lifted so as to clear its

flange I^2 from engagement with the front end
 piece of the rack, as hereinafter described.

A segmental bar L is secured to the sta- 70
 tionary frame A, and is adapted to provide
 bearing for the mold-plate frames as they are
 revolved by the reel, guiding and holding said
 frames in a suitable manner as they are thus
 revolved upon the reel. 75

Each mold-plate frame is provided with a
 lug m , projecting forward from the front end
 of one of its side pieces and adapted to be en-
 gaged with a corresponding notch formed in
 a lever M, pivoted to a bracket m' , projecting 80
 at right angles from the corresponding reel-
 arm. Said lever M is maintained in lock
 with the lug of the mold-plate frame by a
 spring locking device m^2 . This locking de-
 vice prevents the mold-plate frame from ro- 85
 tating on its axial bearings, and thus main-
 tains the mold-plate frame stationary with
 reference to the pair of reel-arms which sup-
 port it.

The reel itself is adapted to be maintained 90
 stationary on its axial bearings by a spring-
 pressed bolt k engaging with the reel-arm.
 This spring-pressed bolt is adapted to be with-
 drawn, so as to release the reel at any time
 by a treadle K and intermediate connec- 95
 tion K' .

The operation of the machine is as follows:
 The operator stands at the front of the ma-
 chine. Before the opening of the segmental
 guide L by due revolution of the reel he brings 100
 before him in succession the respective mold-
 plate frames, discharging from each frame
 the crayons molded thereby and refilling the
 empty molds with the crayon material pre-
 pared for them. He thereupon duly rotates 105
 the reel, so as to carry from him the said filled
 mold-plate frame and to bring before him a
 mold-plate frame having its crayons prepared
 to be discharged, as in the previous instance.

Fig. 1 represents the machine in operation, 110
 with the mold-plate frame immediately in
 front of the operator, having its mold-plates
 closed and prepared to receive the crayon
 material. When said mold-plate frame has
 had the molds of its mold-plates properly 115
 filled with the crayon material, the operator
 presses with his foot upon the treadle K,
 thereby releasing the reel from its lock with
 the stationary frame of the machine, and the
 operator then rotates said reel through the 120
 quadrant of its circle, thereby causing the
 mold-plate frame last before him to pass up
 into complete engagement with the segmental
 bar L, and to correspondingly change the lo-
 cations of the other mold-plate frames. The 125
 mold-plate frame which is thus brought be-
 fore him has its mold-plates in inverted po-
 sition, their molds opening downward and
 ready to discharge the crayons therefrom.
 The crayon-rack G is then slipped into posi- 130
 tion beneath the mold-plate frame, and the
 parts are in relative position, as shown in Fig.
 2. The operator then, by due manipulation
 of the cam mechanism, causes the connecting-

rods E² to move the follower E' forwardly, said follower drawing with it the two series of hook devices D, which latter bring with them the series of mold-plates in consecutive order, following one another in transverse movement. Said forward movement of the follower also causes the rack G to be drawn along in corresponding movement upon its supports H by reason of the flange I² of spring-bolt I engaging therewith. By the time the follower has reached the limit of its forward movement the inclined lug J has drawn up the spring-bolt I by engagement with its collar i', so as to cause its flange I² to clear the horizontal plane of the rack G. This forward movement in consecutive order of the mold-plates releases the crayons from the mold-plates and permits their automatic discharge onto rack G; but should it be necessary, a few blows of a mallet may be given the mold-plates to assist in such discharge. This forward movement of the rack discharges the crayons in vertical position on the rack, thus preventing breakage. The rack, with its crayons, is then withdrawn from beneath the mold-plate frame and conveyed to the drying-room. The operator, by due manipulation of the cam mechanism, causes the connecting-rods E² to draw the follower E' in movement the reverse of that just described, thereby causing the first mold-plate to press against the next one of the series, and so on until all the mold-plates are in closed position. The operator then operates spring-catch M, so as to release the mold-plate frame from its stationary engagement with the corresponding reel-arm and rotates said mold-plate frame upon its axial bearings, so as to bring the molds in upward position. The spring-catch M thereupon automatically relocks said mold-plate frame, so as to maintain it steady while the molds are being refilled with crayon material. The operator then unlocks the filled mold-plate frame from the spring-catch M, so that it may swing free on its axial bearings, and he also operates treadle K, so as to unlock the reel from stationary frame A. He then partially rotates the reel in repetition of the foregoing operation, it being understood that by the time the corresponding mold-plate frame is brought into the vertical position shown in Fig. 1 the crayon material in the molds of said vertical mold-plate frame is sufficiently hard to permit of said position.

The foregoing description and accompanying drawings set forth in detail mechanism in embodiment of my invention. Change may therefore be made therein, provided the principles of construction respectively recited in the following claims are employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination of a support, a mold-plate frame, mold-plates fitted in said frame, and mechanism which moves the mold-plates

relatively to each other within their said frame, said mold-plate frame being journaled on said support on a line parallel with a line passing through different molds of said mold-plates, substantially as set forth.

2. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a supporting-frame and a mold-plate frame journaled therein, of mold-plates fitted in the latter frame and mechanism which moves the mold-plates laterally to and from each other in their said frame, said mold-plate frame being journaled on a line parallel with a line passing angularly through different molds of said mold-plates, substantially as set forth.

3. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a supporting-frame and a mold-plate frame journaled therein on a central horizontal axis, of mold-plates loosely fitted in their said frame and actuating mechanism which moves the mold-plates laterally to and from each other within their said frame, said mold-plates having their molds located in respective lines at right angles to said central horizontal axis, substantially as set forth.

4. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a series of mold-plates, of a series of mold-plate-engaging devices interlocking with each other, substantially as set forth.

5. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a series of mold-plates, of hook mechanism connecting the mold-plates with each other, substantially as set forth.

6. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a series of mold-plates respectively provided with shoulders, of hook mechanism engaging with said shoulders, substantially as set forth.

7. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a series of mold-plates respectively provided with end shoulders, of hook mechanism engaging with said shoulders, substantially as set forth.

8. In a machine for the manufacture of crayons, carpenters' chalk, or other like articles, the combination, with a series of mold-plates, of a series of mold-plate-engaging hook devices, each preceding mold-plate-engaging hook device having a play of movement before engaging with its succeeding mold-plate-engaging device, said play being equal to the distance required to move a mold-plate so as to release its molded articles multiplied by the number of mold-plates engaged by said mold-plate-engaging device, substantially as set forth.

9. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-

cles, the combination, with a series of mold-plates, of a series of mold-plate-engaging hook devices, each mold-plate-engaging hook device provided, respectively, at its two ex-
 5 tremities with a tongue and an opening, the tongues and openings of the several mold-plate-engaging devices engaging with each other, substantially as set forth.

10 10. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a series of mold-plates, of a series of mold-plate-engaging
 hook devices, each provided with a tongue
 15 and an opening, respectively, at its opposite extremities, the tongue of one mold-plate-en-
 gaging hook device having a longitudinal play in the opening of the adjacent mold-
 plate-engaging device equal to the distance
 20 desired to move one mold-plate sufficiently to release its molded articles multiplied by the
 number of mold-plates engaged by said mold-
 plate-engaging device, substantially as set
 forth.

25 11. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a series of mold-plates having shoulders, of a mold-plate-en-
 gaging-device having shoulders, said mold-
 plate-engaging device having play between
 30 the engagements, respectively, of its suc-
 cessive shoulders with the corresponding mold-
 plate shoulders, substantially as set forth.

35 12. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination of a series of mold-plates and mold-plate-engaging hook devices
 having play between their respective engage-
 ments with the consecutive mold-plates, said
 40 play being equal to the distance desired to move the preceding mold-plate sufficiently
 forward to release its molded articles, sub-
 stantially as set forth.

45 13. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a series of mold-plates having shoulders, of a mold-plate-en-
 gaging device having shoulders, said mold-
 plate-engaging device having play between
 50 the engagements, respectively, of its suc-
 cessive shoulders with the corresponding mold-
 plate shoulders, substantially as set forth.

55 14. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a rotary support-
 ing device and a mold-plate frame journaled
 in the latter, of a guide which engages the
 said mold-plate frame as the latter moves
 with the rotary supporting device, said guide
 60 thereby maintaining said mold-plate frame
 in position, substantially as set forth.

15. In a machine for the manufacture of

crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a series of mold-
 plate frames and a rotary device in which
 the latter are journaled, of a curved guide
 65 which provides bearing for said mold-plate
 frames and thereby maintains them in posi-
 tion while moving with said rotary support-
 ing device, substantially as set forth.

70 16. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a reel having ro-
 tary movement in a vertical plane, of a series
 of mold-plate frames journaled in said reel
 and a segmental guide which maintains the
 75 said mold-plate frames engaging therewith
 in position as the reel rotates, substantially
 as set forth.

80 17. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a reel having a ro-
 tary movement in a vertical plane and a se-
 ries of mold-plate frames having axial jour-
 nalings in the outer portions of the arms of
 said reel, of a segmental bar which serves as
 85 a guide for said mold-plate frames, said seg-
 mental bar having its opening located at the
 front side of the machine, substantially as set
 forth.

90 18. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a stationary frame
 and a reel carrying mold-plate frames axially
 journaled therein, of a locking device be-
 95 tween said stationary frame and reel and a
 treadle connected with said locking device,
 substantially as set forth.

100 19. In a machine for the manufacture of crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a mold-plate frame
 and a rack adapted to receive the molded ar-
 ticles, of a locking device which engages with
 and moves said rack simultaneously with the
 movement of said mold-plates as the latter
 105 are opened, substantially as set forth.

20. In a machine for the manufacture of
 crayons, carpenters' chalk, or other like arti-
 cles, the combination, with a mold-plate frame
 and a rack loosely supported beneath the lat-
 110 ter, of a movable device connected with the
 mold-plates, a lock connecting said movable
 device with said rack, and an automatic un-
 locking contrivance, substantially as set
 forth.

115 In testimony that I claim the foregoing to
 be my invention I have hereunto set my hand
 this 29th day of October, A. D. 1884.

JOHN S. COWDERY.

Witnesses:

THOS. B. HALL,

JNO. G. HALL.