

(No Model.)

2 Sheets—Sheet 1.

J. S. COWDERY.

MACHINE FOR THE MANUFACTURE OF CRAYONS.

No. 437,751.

Patented Oct. 7, 1890.

Fig. 1.

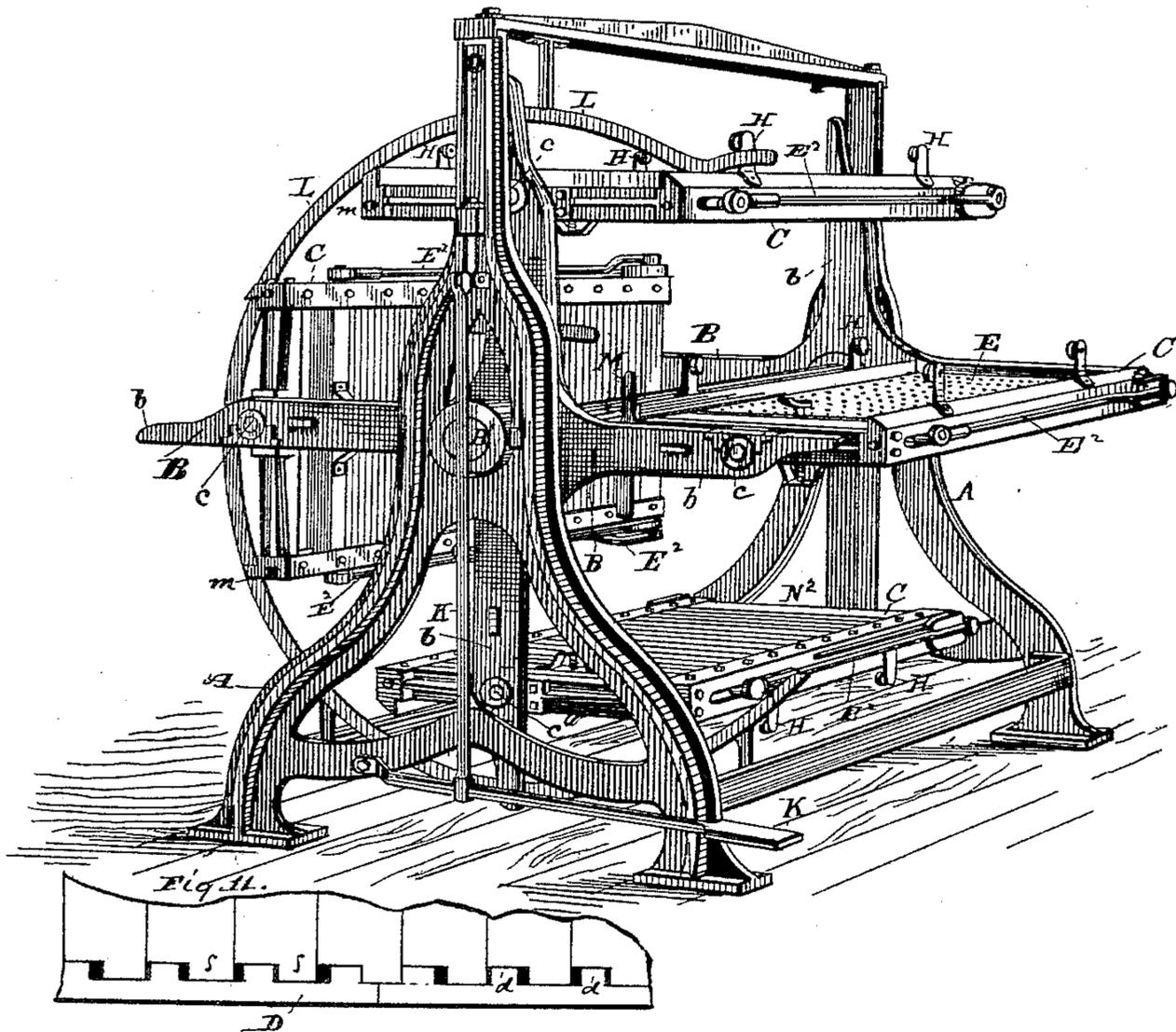


Fig. 2.

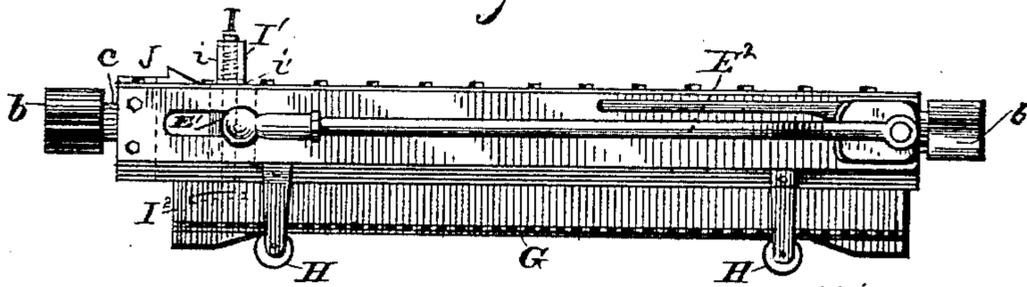
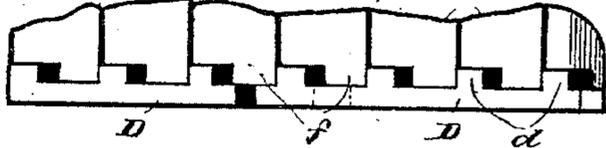


Fig. 10, E



Witnesses

J. D. Fay  
C. C. Glass

J. S. Cowdery Inventor  
By Thos P Hall

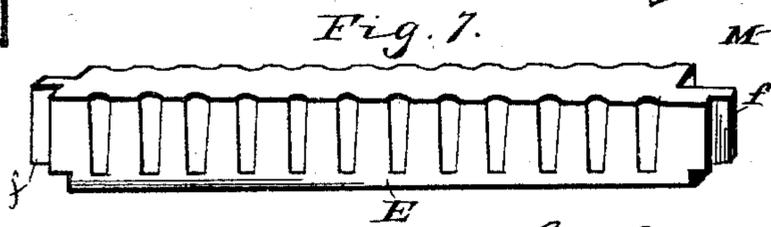
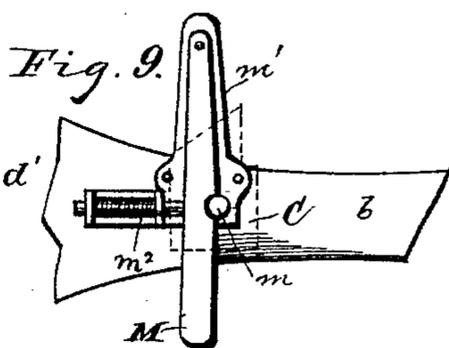
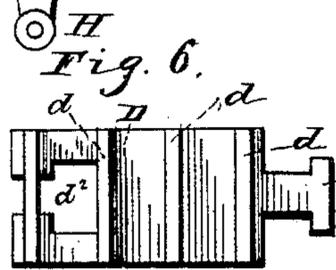
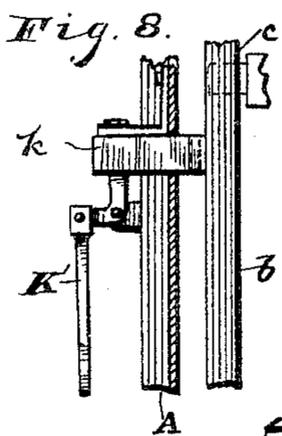
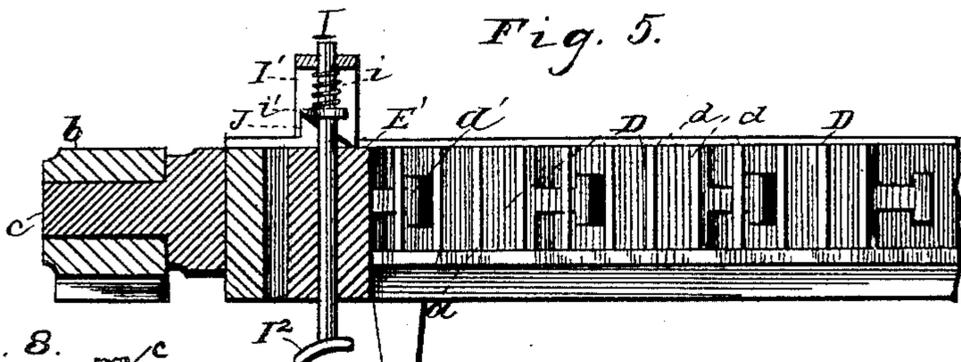
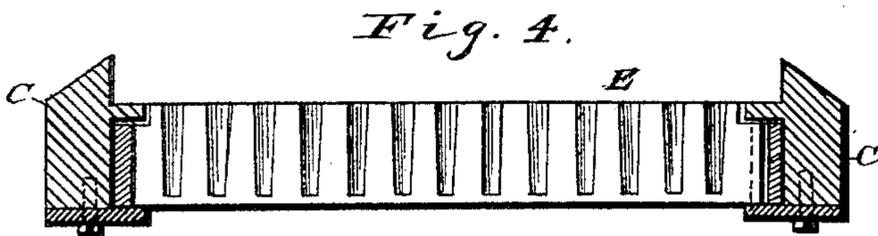
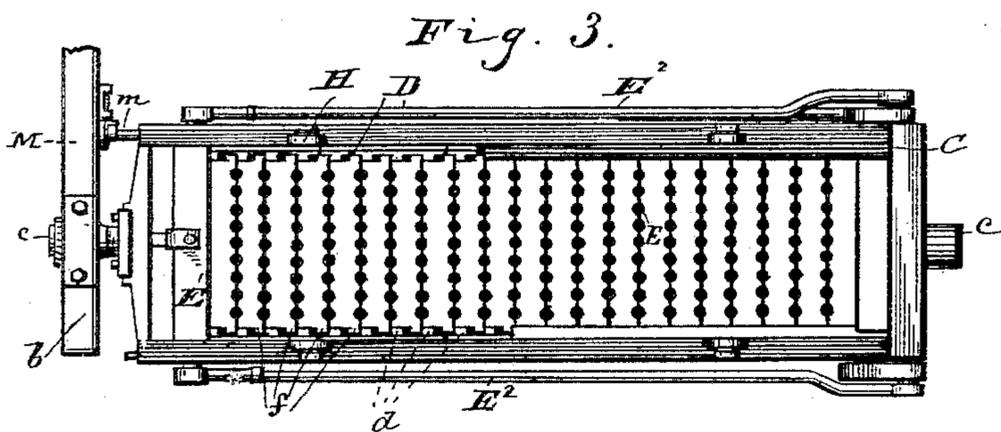
Attorney

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 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 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 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 through different molds of said mold-plates.

My invention consists, more specifically considered in connection with the particular mechanical embodiment of the same, hereinafter set forth, in 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 move 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 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 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 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 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 machine. Fig. 9 is a detail of the device for 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 engaging 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 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 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 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 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 respective 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 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 shoulders d, which engage with shoulders f formed on the corresponding ends of the corresponding mold-plates. A follower E' is located transversely in the front end of each mold-plate frame, and its two extremities working in slotted bearings formed in the side pieces of the mold-plate frame, said follower extremities being respectively pivoted to the two connecting-rods E<sup>2</sup>, 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 sliding movement to and fro, and the follower has secured to the front side of each of its two extremities a tongue  $d'$ , which fits in the opening  $d^2$  of the link-hook device adjacent thereto. The tongue  $d'$  of said hook device works in the opening  $d^2$  of the next succeeding hook device, and so on throughout the series of hook devices, the tongue of one hook device working in the opening of the next succeeding hook device. Thus each of the two series of hook devices located, respectively, along 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 consecutive mold-plates, said play being equal to the distance desired to move the preceding mold-plate sufficiently forward to release its crayons. Each preceding hook device has a longitudinal play before engaging with its succeeding hook 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; the dimensions of the hook device shoulders and the mold-plate shoulders being so proportioned in relation to each other and the dimensions of the tongues and openings of the hook devices being so proportioned in relation 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 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 passing through different molds of said mold-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 beneath the mold-plate frame when the crayons 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 suitable hole formed in the central portion of the follower, said bolt provided at one of its projecting ends with a flange  $I^2$ , which engages with the inner side of the front end piece of the rack G. The opposite projecting extremity of said bolt works in a suitable hole formed in a bracket  $I'$ , secured to the corresponding 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 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 stationary 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.

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 engaged with a corresponding notch formed in a lever M, pivoted to a bracket  $m'$ , projecting 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 device prevents the mold-plate frame from rotating on its axial bearings, and thus maintains the mold-plate frame stationary with reference to the pair of reel-arms which support it.

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

The operation of the machine is as follows: The operator stands at the front of the machine. Before the opening of the segmental guide L by due revolution of the reel he brings 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 prepared for them. He thereupon duly rotates 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, 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 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 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 locations of the other mold-plate frames. The mold-plate frame which is thus brought before him has its mold-plates in inverted position, their molds opening downward and ready to discharge the crayons therefrom. The crayon-rack G is then slipped into position 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 E<sup>2</sup> 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 I<sup>2</sup> 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 I<sup>2</sup> 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 E<sup>2</sup> 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  
and an opening, respectively, at its opposite  
15 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  
desired to move one mold-plate sufficiently to  
20 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 succes-  
sive 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 succes-  
sive 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  
85 said reel, of a segmental bar which serves as  
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-  
tween said stationary frame and reel and a  
95 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 arti-  
cles, of a locking device which engages with  
and moves said rack simultaneously with the  
105 movement of said mold-plates as the latter  
are opened, substantially as set forth.

110 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-  
ter, of a movable device connected with the  
mold-plates, a lock connecting said movable  
115 device with said rack, and an automatic un-  
locking contrivance, substantially as set  
forth.

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.