

No. 827,541.

PATENTED JULY 31, 1906.

W. H. LARRISON.
CORE MAKING MACHINE.
APPLICATION FILED MAR. 12, 1906.

3 SHEETS--SHEET 1

Fig. 2.

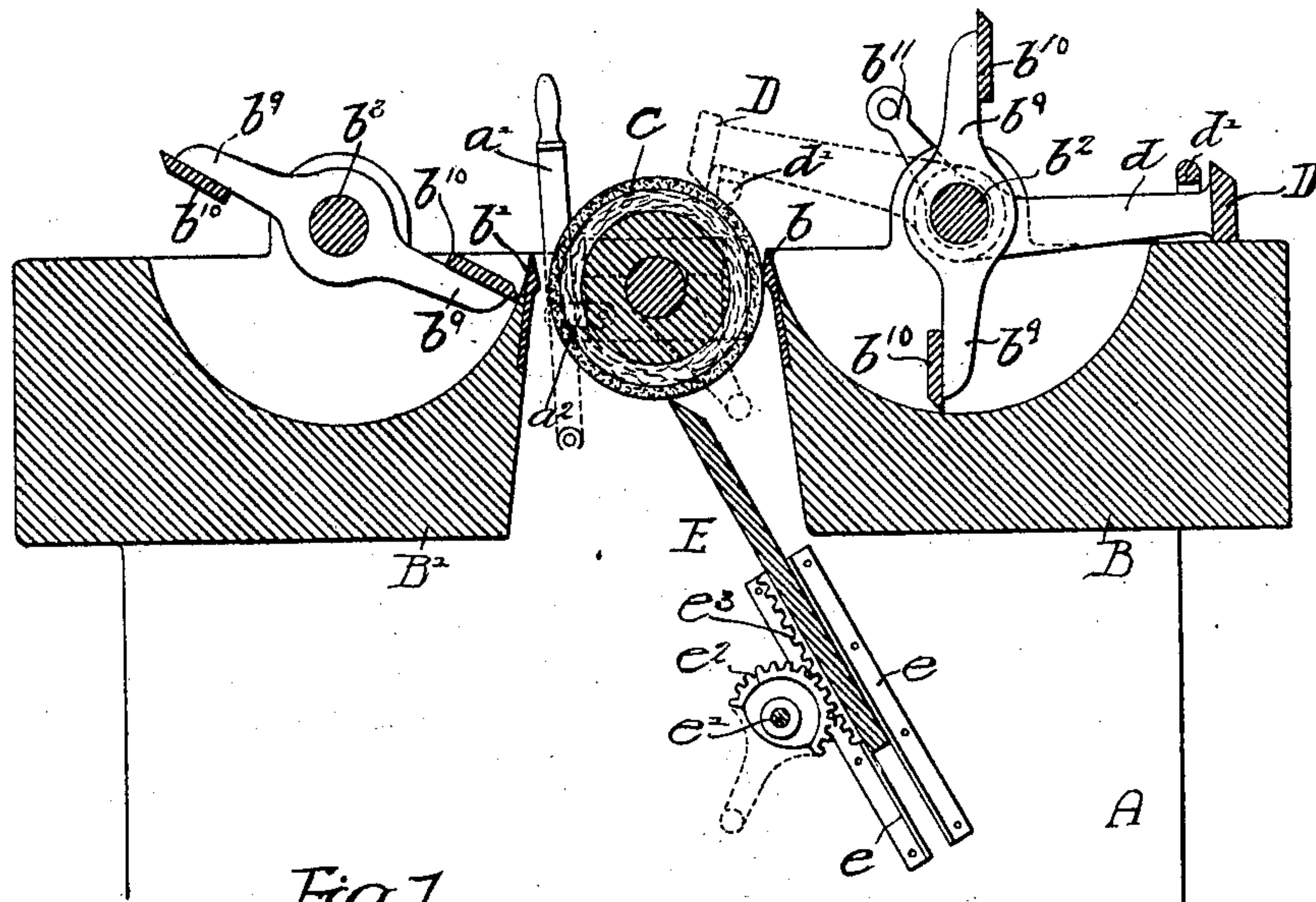


Fig. 1.

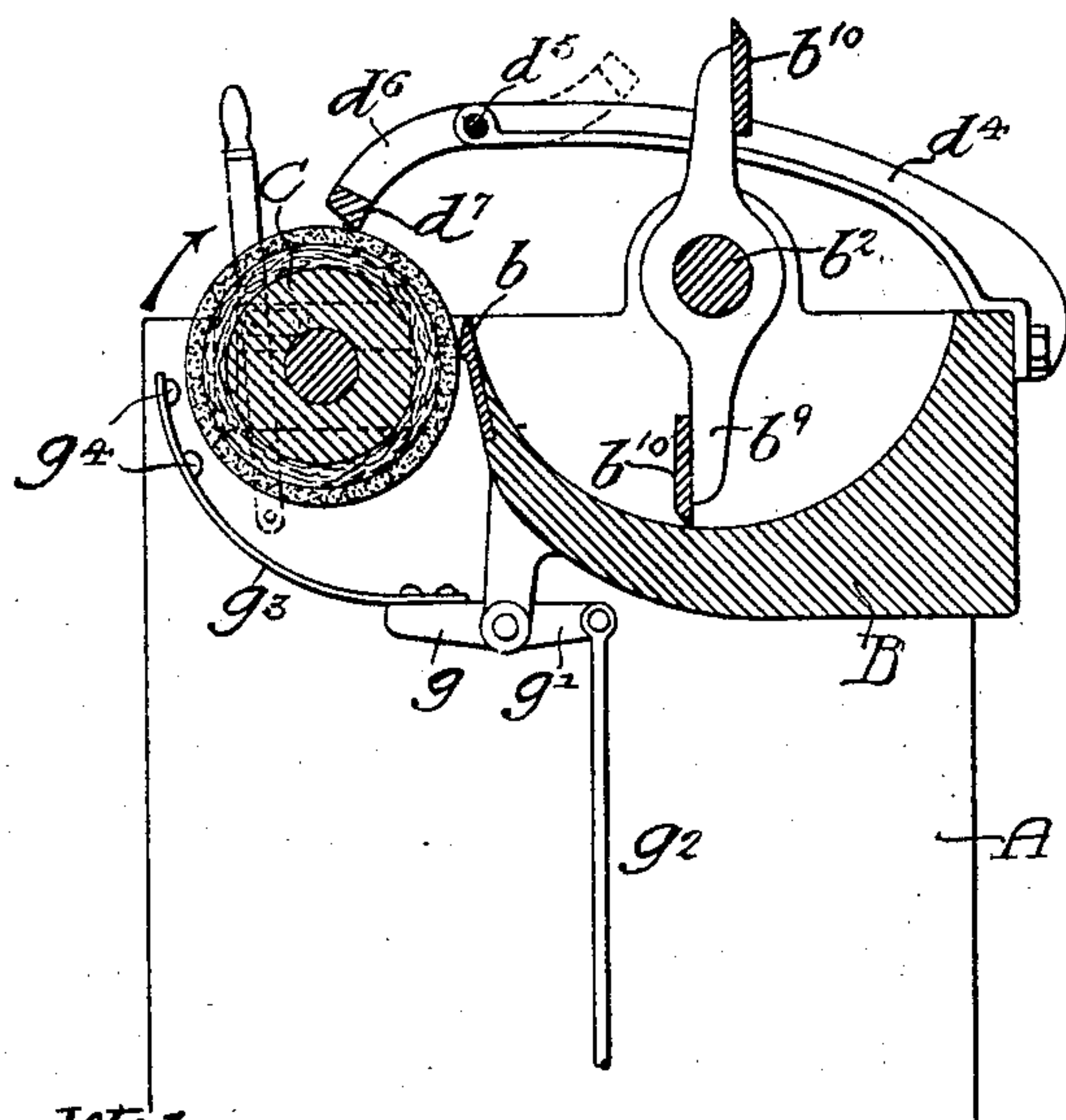
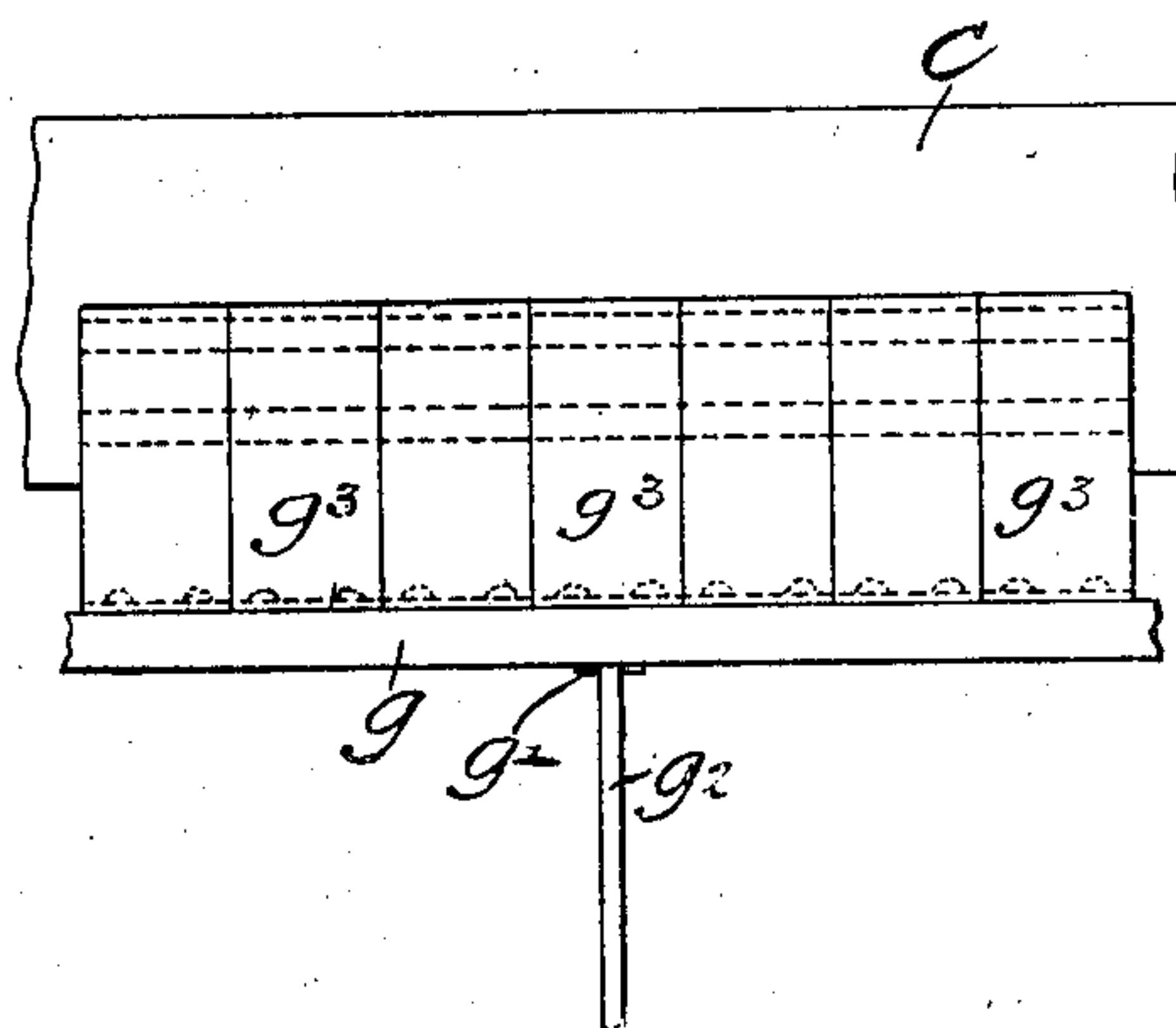


Fig. 4.



Witnesses:
Augustus B. Coppes
Hamilton D. Turner

Inventor.
William H. Larrison.
by his Attorneys,
Howson & Howson

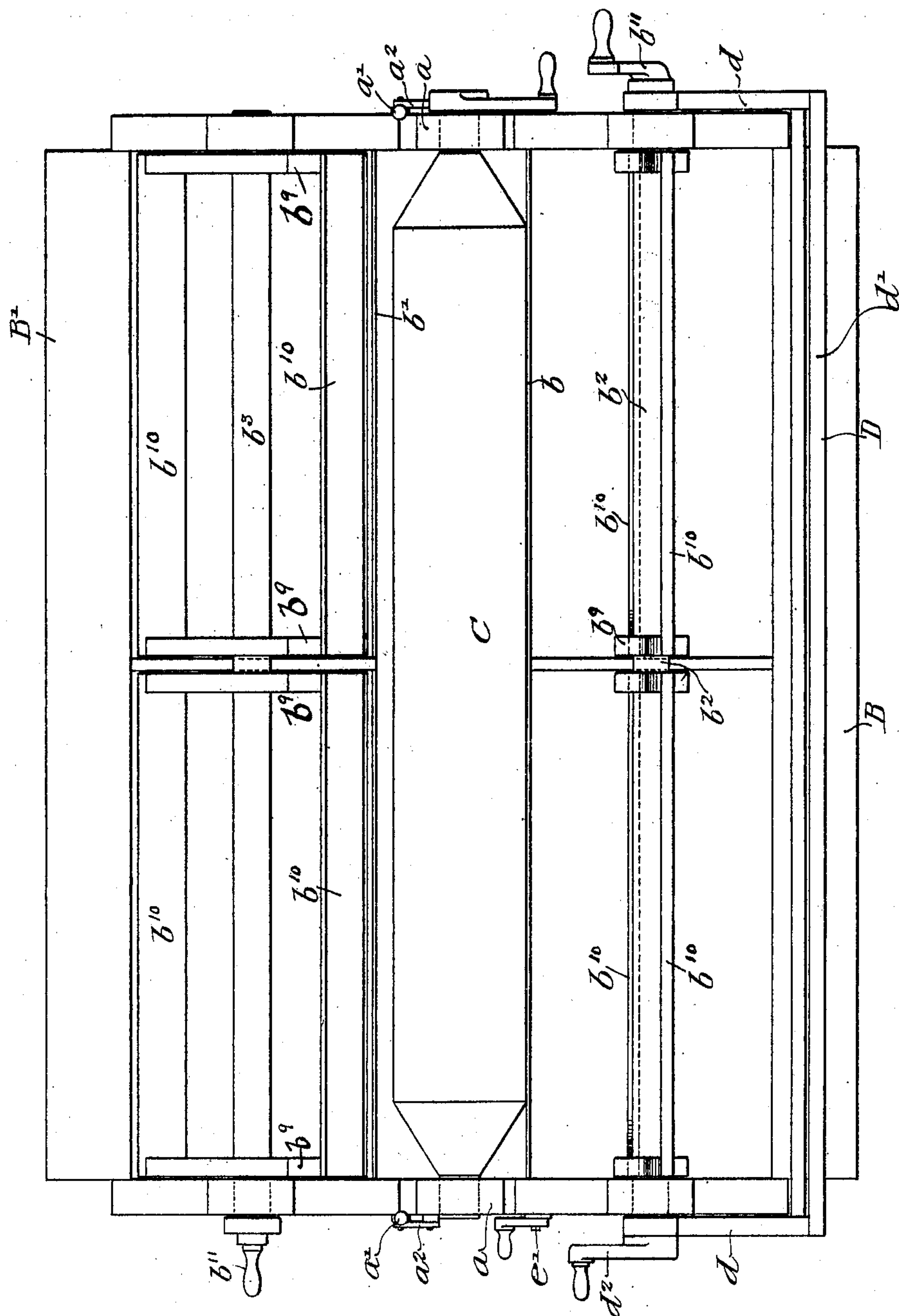
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3 SHEETS—SHEET 2.

Fig. 3.



Witnesses:-
Augustus B. Cooper
Hamilton D. Sumner

Inventor:
William H. Larrison.
by his Attorneys,
Howell & Howson

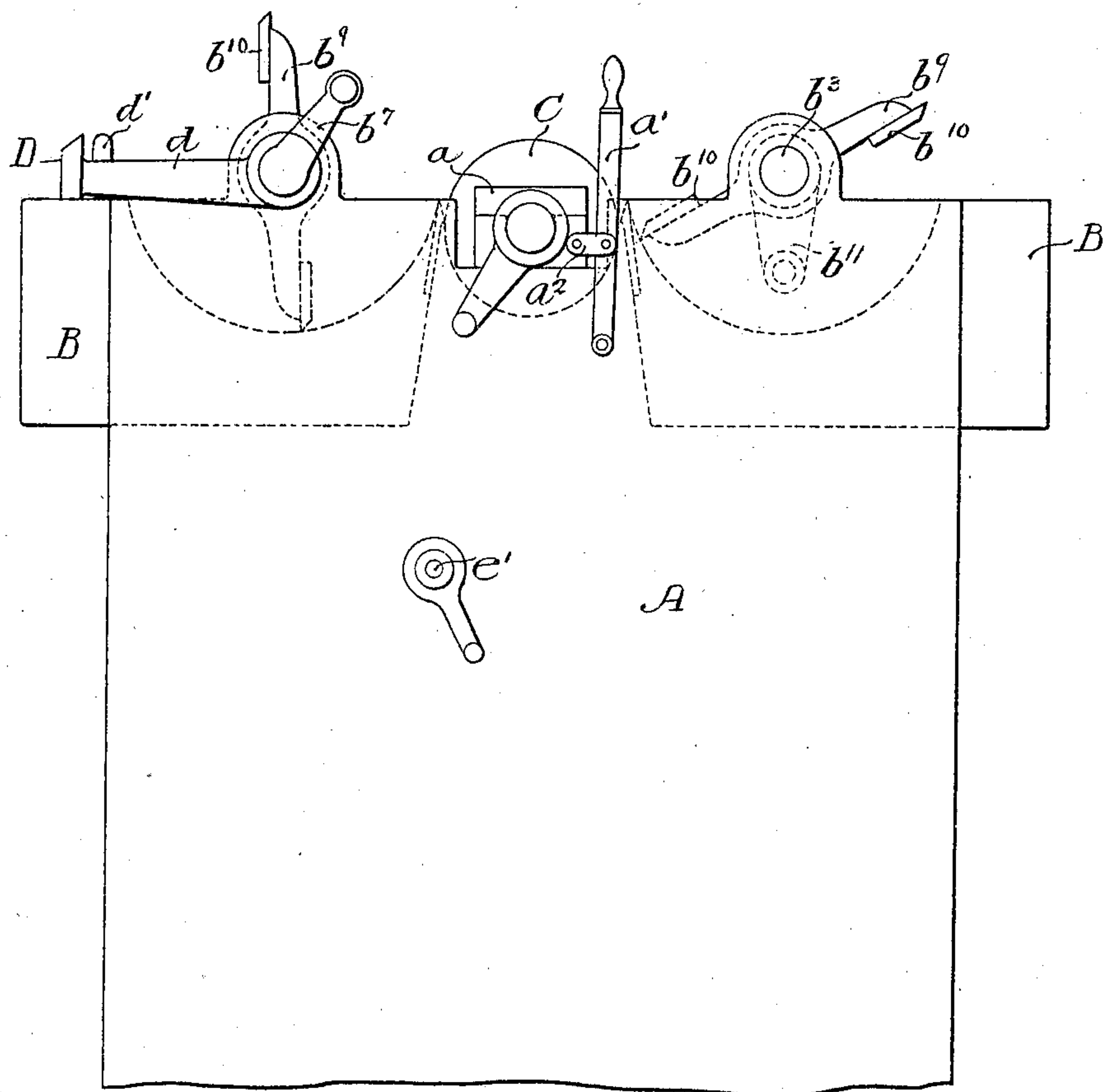
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3 SHEETS—SHEET 3.

Fig. 5.



Witnesses:-
Augustus K. Lippes
Titus H. Irons.

Inventor:-
William H. Larison
by his Attorneys,
Howson & Howson

UNITED STATES PATENT OFFICE.

WILLIAM H. LARRISON, OF FLORENCE, NEW JERSEY.

CORE-MAKING MACHINE.

No. 827,541.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed March 12, 1906. Serial No. 305,679.

To all whom it may concern:

Be it known that I, WILLIAM H. LARRISON, a citizen of the United States, residing in Florence, Burlington county, New Jersey, have invented certain Improvements in Core-Making Machines, of which the following is a specification.

One object of my invention is to provide a device for mechanically performing the work hitherto necessarily done by hand in making elongated cylindrical mud and hay cores such as are used in the manufacture of cast-iron pipe and the like, it further being desired to so arrange the parts of the machine that the time necessary to make a core shall be much less than formerly, while the cores produced shall be of a more uniform as well as of a higher grade than has hitherto been attainable.

Another object of the invention is to provide a machine for mechanically applying mud to spindles in the making of cores for cast-iron pipe and also to provide a strike of improved construction for properly forming said mud, the invention further contemplating means for placing and slicking hay and mud upon a core-spindle.

In addition to the above objects I desire to provide an improved device for placing blacking upon a core after this has received sufficient mud and has been brought to the proper contour.

These objects I attain as hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of the preferred form of my improved core-making machine, illustrating the detail construction thereof. Fig. 2 is a vertical section of a machine designed to mechanically apply blacking to the finished core, this figure also illustrating a special form of rubber and a fin-removing attachment. Fig. 3 is a plan of the machine shown in Fig. 2. Fig. 4 is an inverted plan of a portion of the structure shown in Fig. 1, and Fig. 5 is an end elevation illustrating certain of the features of my invention.

As will be understood by those skilled in the art, it has hitherto been customary in making cores for cast-iron pipe to slowly revolve a rope or hay-covered spindle while simultaneously applying mud to the same in order to form a pipe-core. After a sufficient amount of mud had been placed upon the spindle it was brought to a desired form by

means of a suitable strike, usually made of a length of wood or metal of suitable outline. It is generally customary at the present time to apply the mud to the spindle by hand, and the blacking which it is necessary to place upon the finished core is similarly applied. In carrying out my invention I provide novel means whereby not only the blacking, but also the mud, is mechanically applied to the spindle without the necessity for the core maker to handle either of these substances.

In the above drawings, A is a frame of suitable construction upon which is carried an elongated trough B, so formed as to provide a container having a substantially semicylindrical interior and provided along one side with a relatively sharp edge piece *b*, which forms a strike. It will be seen that the uppermost portion of this strike is sharp and slopes to a small extent downwardly and outwardly.

At each end of the frame is provided a horizontally-slidable bearing *a*, and in these bearings is carried a core-spindle C. For each bearing there is a substantially vertical lever *a'*, connected to it by means of a link *a''*, and by properly manipulating said levers *a'* the bearings may be so moved as to bring the core-spindle toward or from the strike *b*. The trough B has extending through or slightly above it a shaft *b''*, supported in suitable bearings in the frame A and substantially concentric with the interior surface of said trough. Fixed to the shaft at suitable intervals are radially-extending arms *b''*, which carry at their extremities blades *b'''*, preferably beveled at their outer edges, as shown, and extending the length of the trough, so as to form what is, in effect, an elongated paddle-wheel. In order to turn the shaft *b''*, I provide at one end a crank *b''*.

In practice I preferably employ, in addition to the trough B and its arm-carrying shaft, a second trough B' of a similar construction, providing it with a strike *b'* along its edge nearest the core-spindle C. The second trough has within it a shaft *b'''*, to which are fixed arms *b'''* for the support of its blades *b''''*, and this shaft is also provided with a crank *b''''*, whereby it may be turned.

In the form of my invention illustrated in Fig. 1 I provide a bar *g*, pivotally supported from the frame or trough structure in such manner as to extend substantially parallel to the core-spindle to be operated upon, and provide it with a rearwardly-extending arm

g' , to which is connected a downwardly-extending rod g^2 , operated by a foot-lever or other suitable means for swinging or turning said bar g upon its supporting hinges or pivots. Fastened to the bar g and projecting upwardly and forwardly therefrom are a series of curved pieces g^3 , provided at their upper ends with rounded cleats or projecting strips g^4 , extending substantially parallel to the line of the core-spindle. Said pieces g^3 are preferably made of thin sheet-steel or similar material, so that they are free to yield to some extent in a direction toward or from the core-spindle, and form as a whole a continuous structure for engaging and shaping the mud as it is placed upon said spindle.

In the form of my invention shown in Figs. 2 and 3 I provide a rubber consisting of two or more arms d , loosely carried upon the shaft b^2 and connected by a strip D, extending the whole length of the trough, said arms being of such a length that when they are swung upon the said shaft as an axis the strip D will clear the blades b^5 . Also mounted upon the arms d and extending parallel with the strip D is a bar d' , placed adjacent to said strip and having an open space between it and the latter, as shown. One of the arms has connected to it a crank d^2 , whereby said arms, with the strip D, may be turned on the shaft b^2 so as to bring said strip and the bar d' into engagement with the core.

Under some conditions I may in place of the parts d , d' , and D employ a rubber of the construction shown in Fig. 1, in which two or more arms d^4 are rigidly attached to the trough B, usually at the ends thereof, and extend over the same toward the core-spindle. These arms have extending between them a bar d^5 , to which are hinged or pivoted two or more arms d^6 , connected at their outer ends by a rubbing strip d^7 , placed to engage the surface of the core-spindle or material thereon. When not in use, the rubber strip may be swung up and back upon the rod d^5 as a hinge and caused to rest upon the arms d^4 , as indicated in dotted lines in Fig. 1.

If found desirable, a sharp-edged wooden or metal piece E may be mounted in guides e , which are carried by the end portions of the frame A, said piece being free to move toward and from the core-spindle C. For the purpose of operating said piece there is provided at each end of the frame a spindle e' , having fixed to it a segmental gear e^2 , meshing with the rack e^3 on said piece E.

Under operating conditions mud is supplied to the trough B, and in the form of my invention shown in Fig. 1 the rubber strip d^7 is turned on its hinge so as to engage the surface of the core-spindle. This is then turned either by hand or power, as desired, in the direction indicated by the arrow, and while hay is fed between the surface of the core-

spindle and the strip d^7 the shaft b^2 is turned, by means of its crank b^6 , so that its blades b^5 raise a body of mud from the trough throughout the whole length of said core-spindle. This mud flows over the strike b into engagement with the hay on the core-spindle and is firmly and evenly deposited upon and over the hay. The cleats or projections g^4 on the pieces g^3 are brought into engagement with the surface of the core-spindle by the upward swinging of the bar g upon its pivot under the action of a downward force exerted on the rod g^2 by the operating means therefore, (not shown,) so that said cleats smooth the mud and assist in its uniform distribution over the hay on the core-spindle. After a sufficient amount of mud and hay has been placed upon the core-spindle the shaft b^2 is turned in a direction the reverse of that heretofore noted, so that one of the blades b^5 moves by and cleans the mud from the edge of the strike b , thereby preventing the deposit of further material upon the core, which is then removed and dried. It will be understood that the form of my invention shown in Fig. 1 is commonly employed in connection with the second trough B' and its associated parts in the manner illustrated in Fig. 2, so that when after being properly dried said core is replaced in the bearings a it may receive a second coating of mud raised by the blades b^5 from the trough B and be slicked by the edge b , after which the bearings a are moved by means of their levers a' , so as to bring the surface of the mud on the core-spindle adjacent to the strike b' . The shaft b^3 is then turned, so as to raise a body of blacking which is supplied to the trough B' and cause the same to flow over the said strike b' onto the mud on the core-spindle. It is only necessary to turn said spindle through one or two revolutions in order that it shall be properly blacked, after which it is moved away from the strike b' and taken from its bearings.

If desired, the form of rubber shown in Fig. 2 may be employed in place of that shown in Fig. 1, and in such case this latter is moved into the position shown in dotted lines and hay is fed under the strip D. By the proper manipulation of the shaft b^2 the blades b^5 are made to raise a body of mud from the trough B, and this not only flows into contact with the core-spindle and the hay thereon by passing over the edge of the strike b , but also by flowing between the two strips D and d' , thereby being pressed and uniformly distributed over the spindle and the material thereon.

It will be noticed that the strips or bars D and d' are preferably formed with the face or edge adjacent to the surface of the core-spindle inclined at an angle thereto, so that the hay or material fed under said face will be properly directed to the core-spindle. The

sharp-edged piece E may be employed, if desired, for removing the fins or projecting pieces of mud existing on the core after this has been dried or baked and is moved up into engagement with the core by proper manipulation of the crank on the spindle or spindles e' .

While I preferably employ two troughs B and B', one on each side of the core-spindle, and so support this latter that it shall be movable adjacent to the strike carried by either of these troughs, I may, if desired, use but a single trough with or without the series of yielding pieces g^3 , though I have found these of advantage not only in smoothing and distributing the mud on the surface of the core-spindle, but also as a means for collecting the mud otherwise falling to the ground. From time to time this mud which accumulates upon said pieces g^3 may be removed.

It will be noted that at any time during the operation of forming a core either of the shafts b^2 or b^3 may be turned to cause its blades b^5 to remove the mud or blacking from the respective strikes b b' , it being understood that in the event of any large work being handled the said shafts may require a number of revolutions in order to properly raise or remove a sufficient amount of material. It is further to be noted that where previous to my invention a core maker could not quickly or conveniently apply a body of mud or blacking along the whole length of a core simultaneously and then remove the unused material it is possible with my apparatus to operate simultaneously upon the entire length of a core, it being only necessary to turn the core-spindle through but a few revolutions in order to finish the work, after which the surplus material may be simultaneously removed from all parts of the strike.

It will be seen that one important advantage of my invention is due to the application of a body of mud simultaneously to the entire length of the core-spindle or to any desired fraction thereof, whereby a great saving of time is effected, and also to the ability of the core maker to conveniently and quickly remove the unused body of mud from the vicinity of the finished core and from the strike. Moreover, by my above-described device I not only remove the surplus mud or other material, but also at the same operation clean the strike, a result which, so far as I am aware, has not hitherto been attained mechanically.

It is of course obvious that the straight edge formed by the yieldable pieces g^3 may be supported at any desired and convenient point around the core-spindle and from any suitable part of the structure, though in the particular case illustrated I prefer to utilize said pieces to form a container to catch the mud removed from the core-spindle by this

action during the operation of forming a core. While I prefer to employ the above-mentioned yielding straight edge, so that it may locally accommodate itself to variations in the thickness of the first layer of hay and mud applied to the spindle, there may be cases in which it may be omitted, and that without causing a departure from the main features of my invention.

I claim as my invention—

1. The combination in a core-making machine, of a revoluble core-spindle, a strike, a container for mud, and means for mechanically removing surplus mud from the strike when a desired quantity thereof has been applied to said core-spindle, substantially as described.

2. The combination in a core-making machine, of a revoluble core-spindle, a strike, a container for mud, with an elongated paddle-wheel placed to transfer mud from said container to said spindle and apply it simultaneously to the entire length of the spindle, substantially as described.

3. The combination in a core-making machine, of a revoluble core-spindle, a strike, with a device having means for supplying mud to said spindle to form a core and for removing the surplus mud from the vicinity of said spindle when the core is finished, substantially as described.

4. The combination in a core-making machine, of a revoluble core-spindle, with an elongated paddle-wheel for mechanically supplying core material simultaneously to the entire length of the spindle, and means for shaping said material to form a core as the spindle is turned, substantially as described.

5. The combination in a core-making machine, of a revoluble core-spindle, a container for core-forming material, and an elongated paddle-wheel on each side of the spindle for supplying core-forming material to the entire length of the spindle from either side of the same, substantially as described.

6. The combination in a core-making machine, of a revoluble core-spindle, a strike, a reservoir for core-forming material, an elongated paddle-wheel for supplying said material from the reservoir simultaneously to the entire length of the core-spindle, with means for moving said spindle toward and from the strike at will, substantially as described.

7. The combination in a core-making machine, of means for revolubly supporting a core-spindle; a strike on each side of said spindle, a reservoir for core-forming material for each strike, a device for each reservoir provided with means for transferring core-forming material therefrom to the spindle and mechanism for removing surplus material from the strike, with means for moving the spindle so as to bring it adjacent to either strike, substantially as described.

8. The combination in a core-making ma-

chine of a trough, a strike extending along one edge of the same, a core-spindle, with blades rotatably mounted in said trough for transferring core-forming material therefrom to said core-spindle, substantially as described.

9. The combination of a trough formed with a substantially semicylindrical interior, a shaft supported substantially concentrically with said interior, means for turning the shaft, blades on the shaft, a strike, and a core-spindle adjacent to said strike placed to receive core-forming material transferred to it from the trough by said blades, substantially as described.

10. The combination in a core-making machine, of a frame, a core-spindle revolvably supported thereon, a trough extending substantially parallel to the line of said spindle on each side of the same, each trough having a shaft provided with blades, and means for turning said shafts to transfer material from either trough to the core-spindle, substantially as described.

11. The combination in a core-making machine, of a revoluble core-spindle, a rubbing device extending substantially parallel to the line of said spindle, a reservoir for core-forming material, and an elongated paddle-wheel for transferring material from said reservoir to said rubbing device, substantially as described.

12. The combination in a core-making machine, of a revoluble core-spindle, a rubbing device extending substantially parallel to the line of said spindle, a reservoir for core-forming material, a strike, with revoluble blades operative in the reservoir for transferring core-forming material therefrom and delivering it to the core-spindle between the strike and the rubbing device, substantially as described.

13. The combination in a core-making machine, of a revoluble core-spindle, a rubbing device adjacent thereto consisting of a supporting structure and a rubbing strip extending substantially parallel to the spindle and movable on said structure toward and from said spindle, with means for supplying core-forming material to the spindle, substantially as described.

14. The combination in a core-making machine, of a revoluble core-spindle, a rubbing device supported adjacent thereto and including two bars parallel to each other and to the line of said spindle, with means for supplying core-forming material to the spindle, substantially as described.

15. The combination in a core-making machine, of a core-spindle, a trough having a substantially semicylindrical recess, a shaft substantially concentric with said recess, arms on said shaft, blades carried by said arms and operative in said trough, means for

turning the shaft to cause said blades to deliver core-forming material from the trough to the core-spindle, with a rubbing device movable into and out of engagement with the core-spindle, substantially as described.

16. The combination in a core-making machine, of a revoluble core-spindle, an elongated paddle-wheel placed to mechanically apply core-forming material simultaneously to the entire length of said spindle, with a device movable toward and from the spindle and independent of said paddle-wheel for mechanically removing fins or projections from the finished core, substantially as described.

17. The combination in a core-making machine, of a revoluble core-spindle, an elongated paddle-wheel for mechanically applying core-forming material simultaneously to the entire length of said spindle, with a device independent of said wheel for mechanically smoothing the said core-forming material upon the core-spindle, substantially as described.

18. The combination in a core-making machine, of a revoluble core-spindle, means for mechanically applying core-forming material simultaneously to the entire length of said spindle, a pivotally-supported smoothing device extending substantially parallel to the line of said core-spindle, and mechanism for turning said device into and out of engagement with the material applied to said core-spindle, substantially as described.

19. The combination in a core-making machine, of a revoluble core-spindle, a smoothing device consisting of a series of independently-yieldable pieces, and means for moving said device into engagement with core-forming material applied to the core-spindle, substantially as described.

20. The combination in a core-making machine, of a revoluble core-spindle, a smoothing device consisting of a pivoted bar and a series of spring-pieces carried thereby, with means for swinging said bar on its pivots to cause said spring-pieces to move into engagement with core-forming material on the core-spindle, substantially as described.

21. The combination in a core-making machine, of a revoluble core-spindle, a container for core-forming material, means for mechanically transferring material from said reservoir to said spindle, with a rubber consisting of a straight edge having pivotally-mounted supporting-arms and movable at will into engagement with material on the spindle, substantially as described.

22. The combination in a core-making machine, of a revoluble core-spindle, a strike, means for mechanically supplying mud to the spindle, and a smoothing device formed as a container to catch material removed from the core-spindle during the operation of making a core, substantially as described.

23. A core-making machine consisting of a
revoluble core-spindle, means for mechan-
ically applying mud to a layer of hay upon
said spindle, and a device consisting of a num-
5 ber of independently-yieldable pieces for
smoothing and forming said mud on the spin-
dle, substantially as described.

In testimony whereof I have signed my
name to this specification in the presence of
two subscribing witnesses.

WILLIAM H. LARRISON.

Witnesses:

T. PERCY BAKER,
WILLIAM E. BRADLEY.