

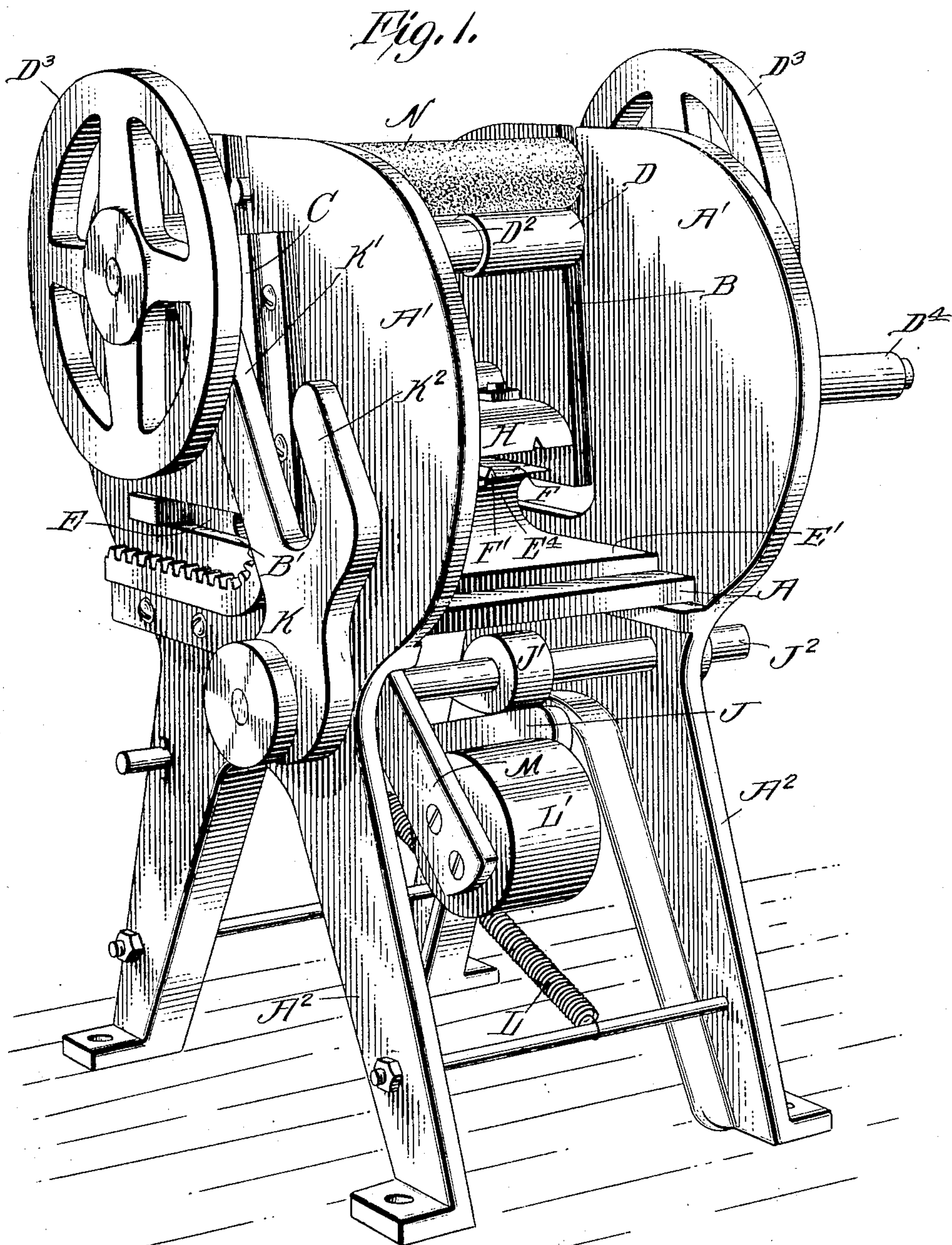
No. 872,025.

PATENTED NOV. 26, 1907.

W. F. SMITH & M. JOHNSON.
MACHINE FOR BENDING MATCH SAFE BLANKS.

APPLICATION FILED JAN. 16, 1907.

5 SHEETS—SHEET 1.



Witnesses

O. H. Holmes
E. B. M. Bach

Inventors

W. F. Smith and
Martin Johnson
By *O. Meera Brock*
Attorneys

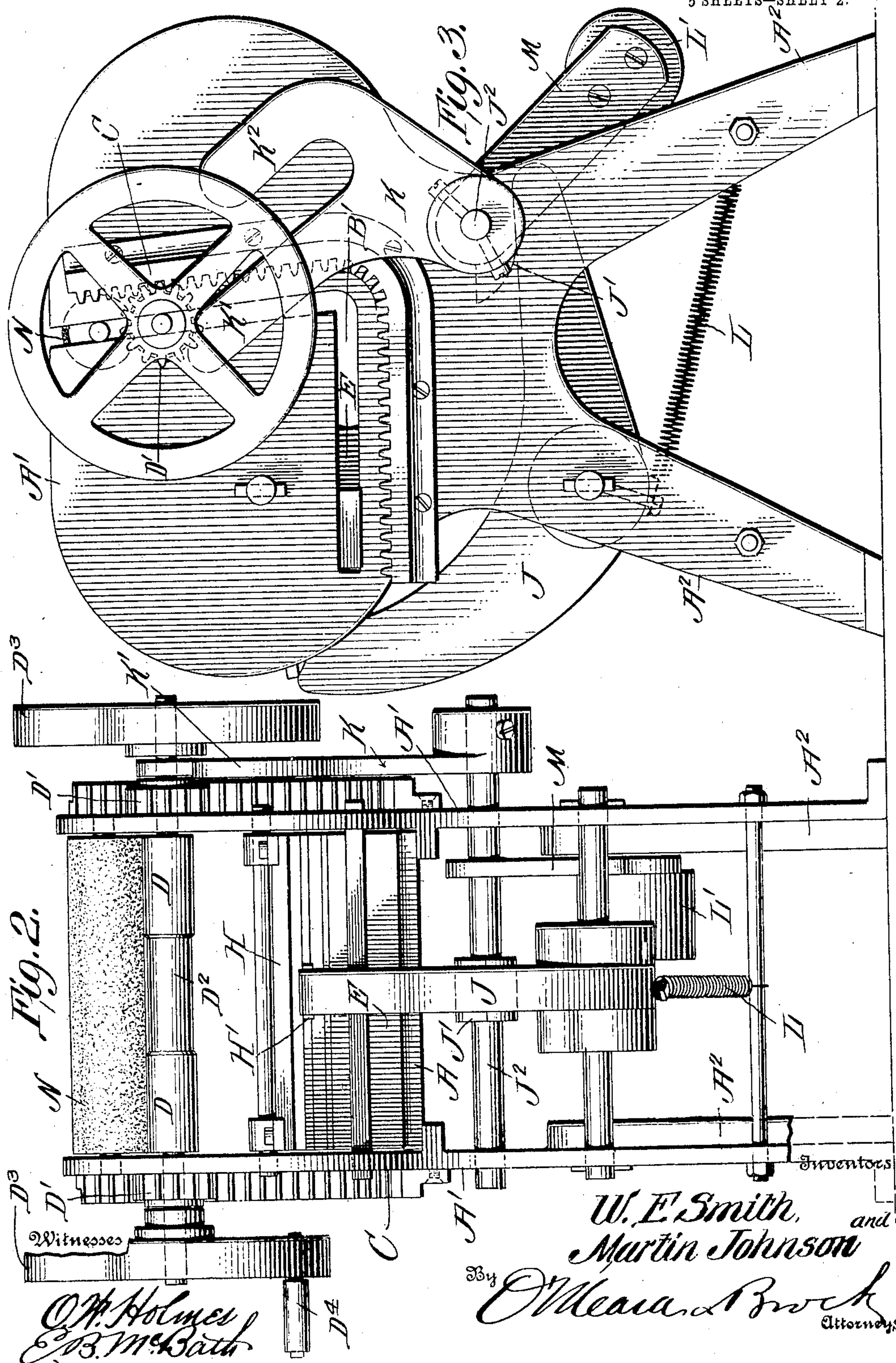
No. 872,025.

PATENTED NOV. 26, 1907.

W. F. SMITH & M. JOHNSON.
MACHINE FOR BENDING MATCH SAFE BLANKS.

APPLICATION FILED-JAN. 16, 1907.

5 SHEETS-SHEET 2.



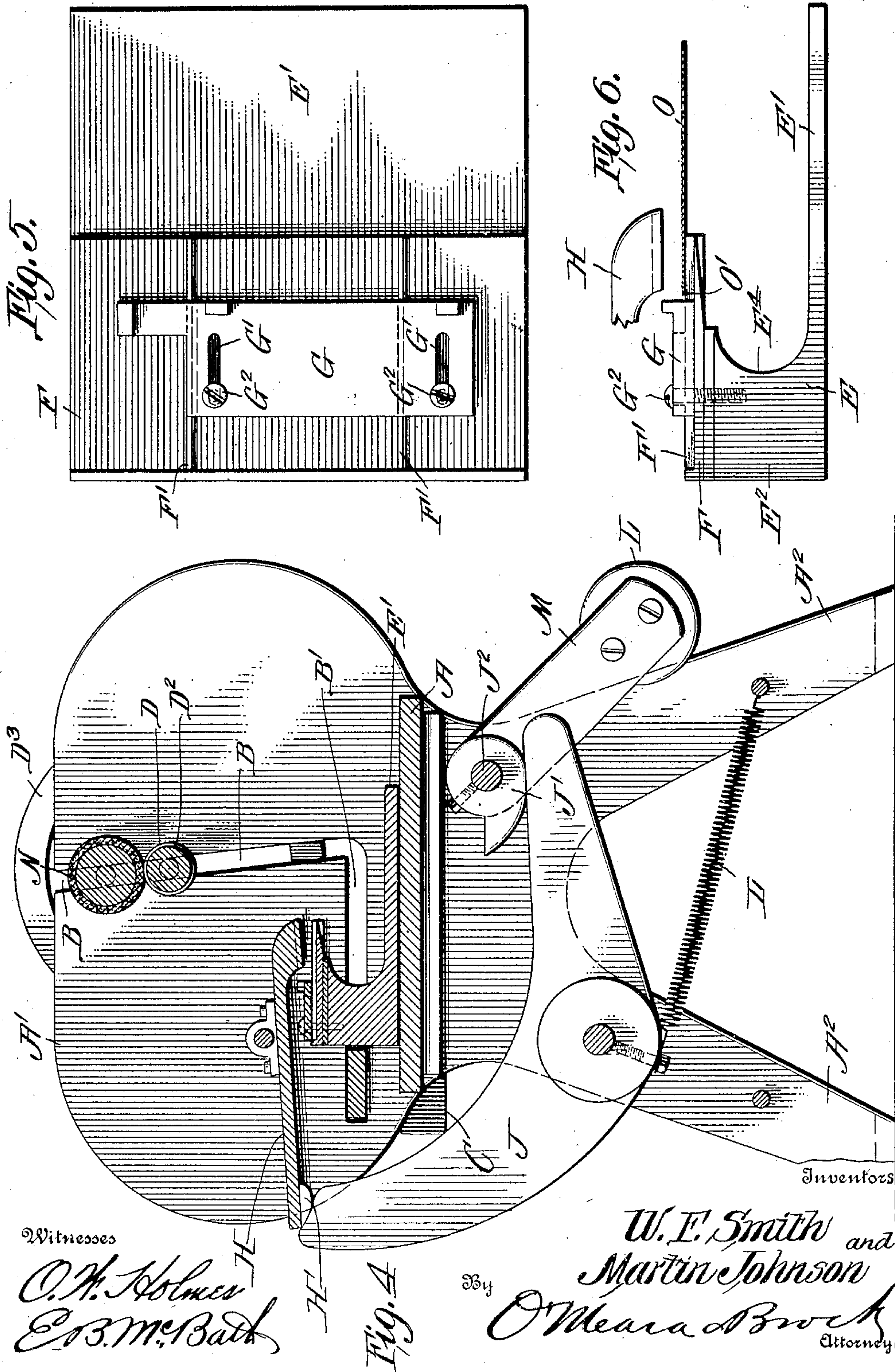
No. 872,025.

PATENTED NOV. 26, 1907.

W. F. SMITH & M. JOHNSON.
MACHINE FOR BENDING MATCH SAFE BLANKS.

APPLICATION FILED JAN. 16, 1907.

5 SHEETS—SHEET 3.



Witnesses

O. H. Holmes
E. B. M. Badt

Fig. 4

By

W. F. Smith and
Martin Johnson
O'Neara Brock
Attorneys

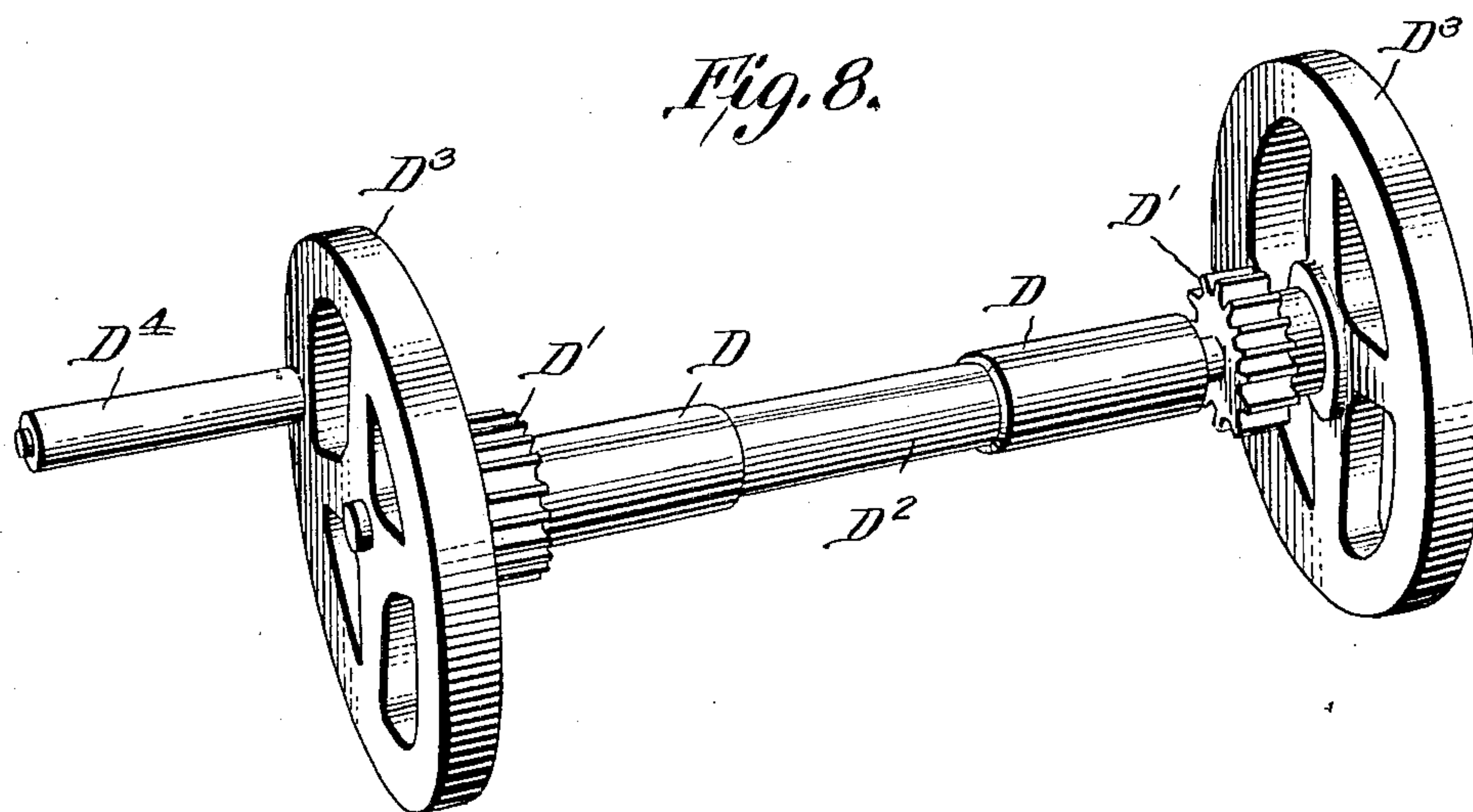
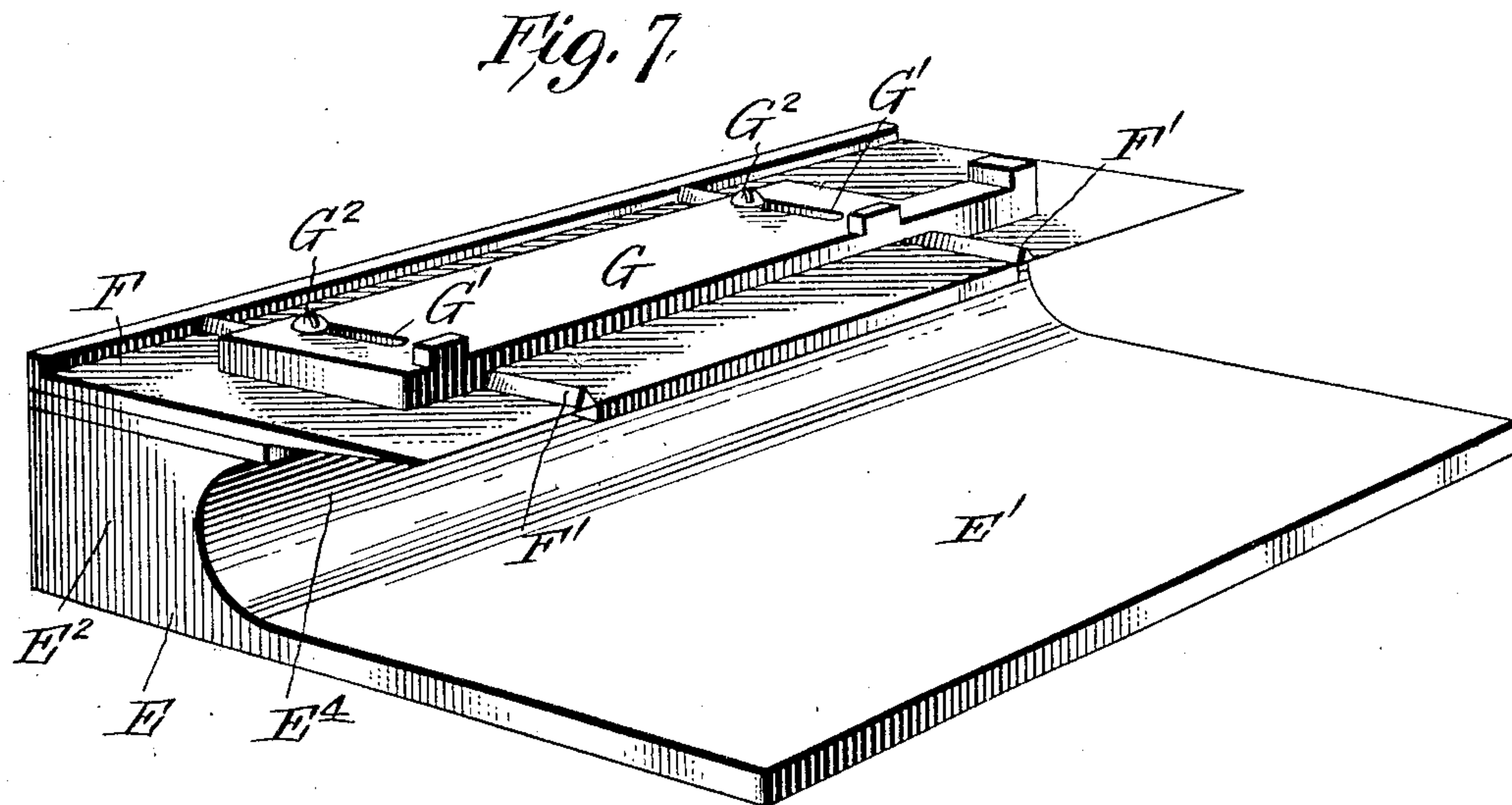
No. 872,025.

PATENTED NOV. 26, 1907.

W. F. SMITH & M. JOHNSON.
MACHINE FOR BENDING MATCH SAFE BLANKS.

APPLICATION FILED JAN. 16, 1907.

5 SHEETS—SHEET 4.



Witnesses

O. H. Holmes
E. B. McBath

Inventors

W. F. Smith and
Martin Johnson

By

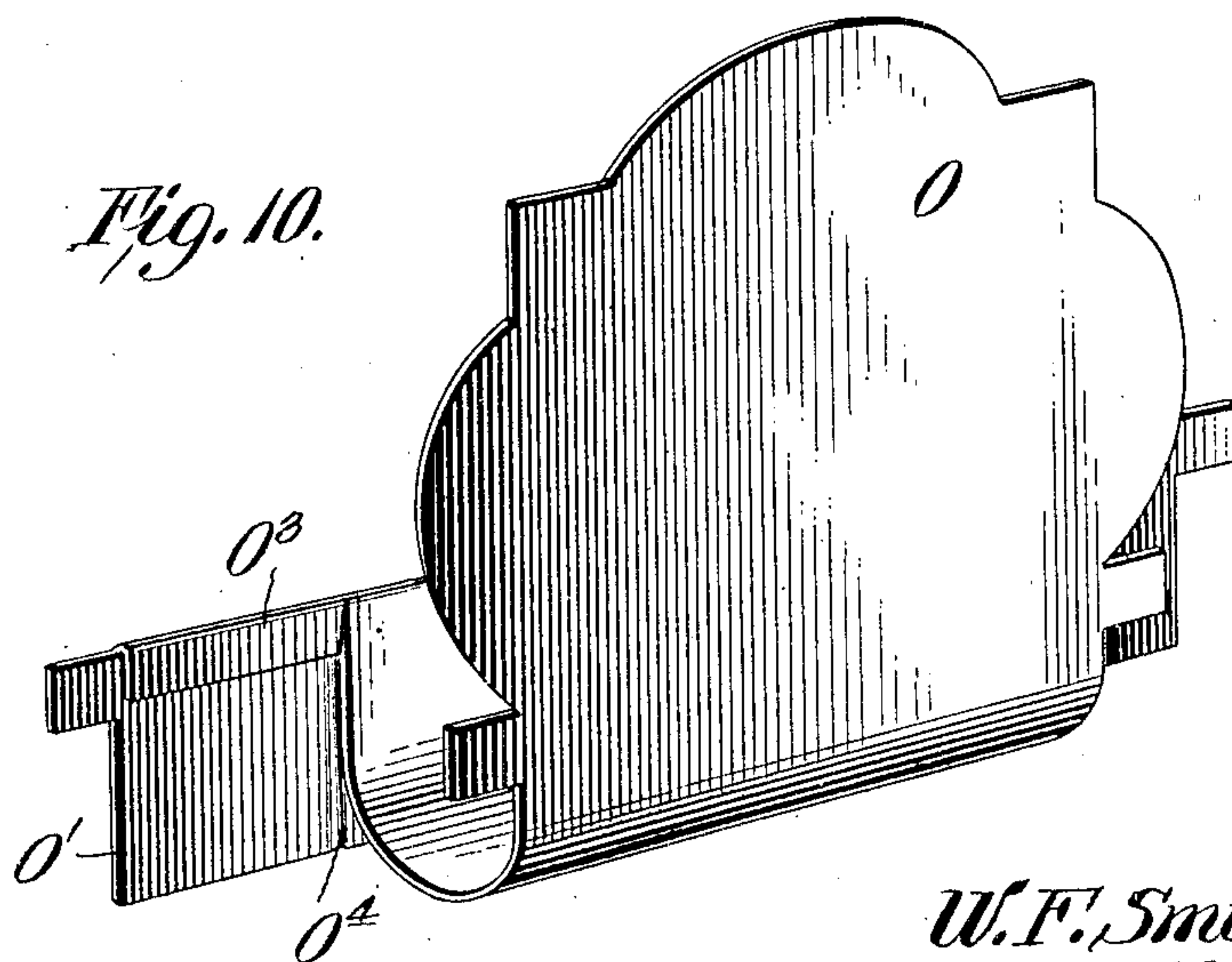
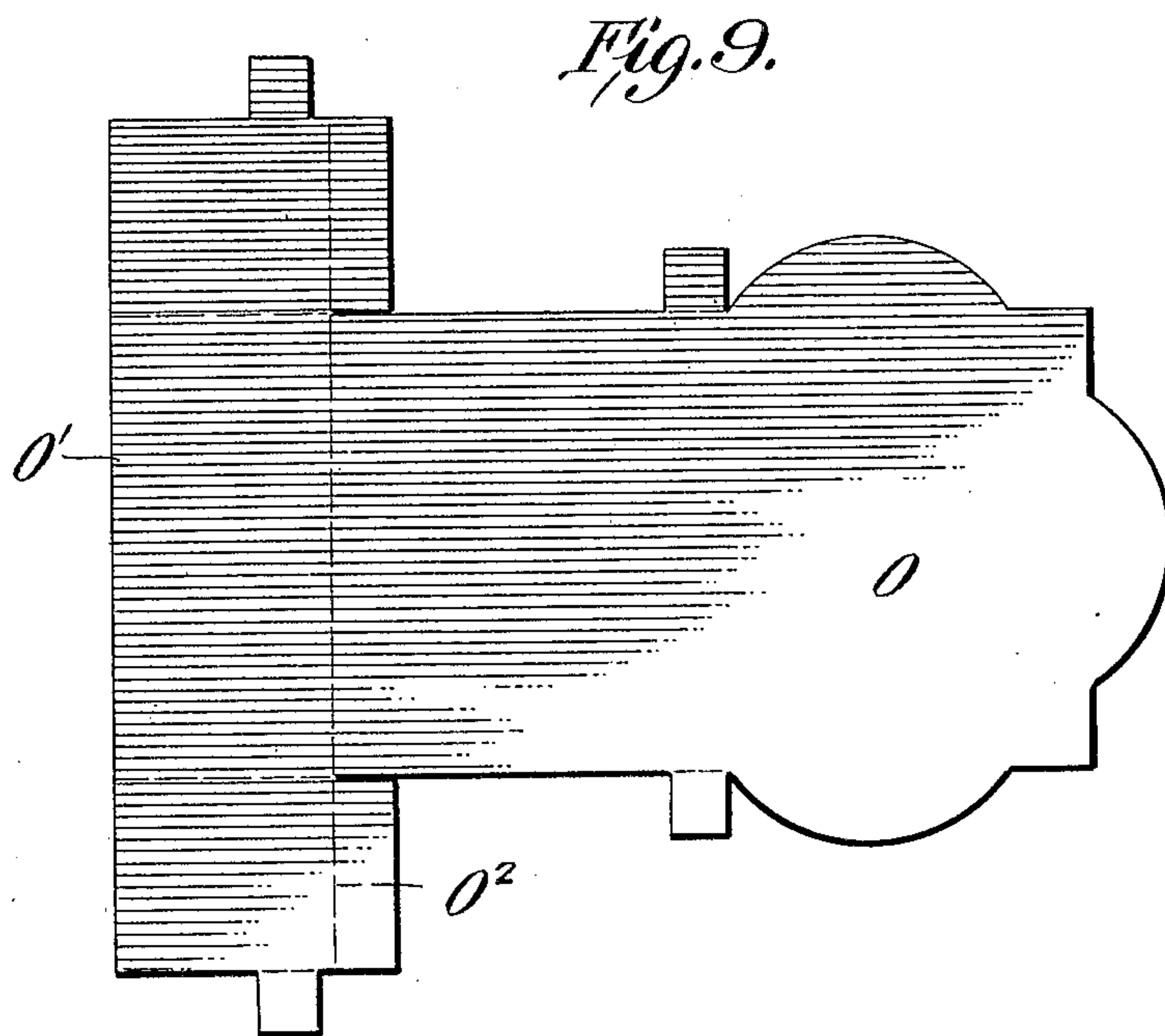
O'Meara & Brock
Attorneys

No. 872,025.

PATENTED NOV. 26, 1907.

W. F. SMITH & M. JOHNSON.
MACHINE FOR BENDING MATCH SAFE BLANKS.
APPLICATION FILED JAN. 16, 1907.

5 SHEETS—SHEET 5.



Witnesses

O. H. Holmen
E. B. McBath

Inventors

W. F. Smith and
Martin Johnson

By *D. Meera Brock*
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM F. SMITH AND MARTIN JOHNSON, OF COSHOCTON, OHIO.

MACHINE FOR BENDING MATCH-SAFE BLANKS.

No. 872,025.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed January 16, 1907. Serial No. 352,585.

To all whom it may concern:

Be it known that we, WILLIAM F. SMITH and MARTIN JOHNSON, citizens of the United States, residing at Coshocton, in the county of Coshocton and State of Ohio, have invented a new and useful Improvement in a Machine for Bending Match-Safe Blanks, of which the following is a specification.

This invention relates to a machine for operating on blanks for forming match safes, the machine bending the blank, the final step completing the box being performed by hand.

The invention consists of a suitable form of clamping means for holding the blank, a roller coöperating with the forming block, and an arrangement of cams and levers whereby the clamping device is automatically operated by the travel of the roller.

In the drawings forming a part of this specification:—Figure 1 is a perspective view showing the machine as seen from the front and side. Fig. 2 is a rear end view of the machine. Fig. 3 is a side elevation. Fig. 4 is a longitudinal section taken through the bed plate, forming block and clamping member and transversely through certain shafts and rollers. Fig. 5 is a plan view of the forming block, and parts carried thereby. Fig. 6 is a side elevation of the forming block, and one end portion of the clamping member, a blank being in position to be engaged thereby. Fig. 7 is a perspective view of the forming block. Fig. 8 is a perspective view of a shaping roller and parts carried thereby. Fig. 9 is a plan of the blank as placed in the machine. Fig. 10 is a perspective view of the blank after it has been acted upon by the machine, and ready for the final step in forming the complete box.

In these drawings A represents a bed plate which is supported by ridges formed upon the inner faces of the parallel side members A', the said side members being supported by suitable legs A², all of these parts combined forming a suitable frame upon and within which are supported the mechanism for forming the blanks. The sides A' are provided with vertical slots B which communicate at their lower ends with rearwardly extending horizontal slots B'. Angled rack bars C are arranged parallel to the slots B and B' and form a track upon which travels a roller D, which roller is provided with pinions D' adjacent each end, the said pinions

engaging the rack bars C. The roller D is reduced in diameter midway its ends as shown at D². Balance wheels D³ are carried by the ends of the rollers and to one of these wheels is connected a handle D⁴.

Upon the bed plate and adjacent the rear end of the frame is mounted a forming block E, which block consists of a plane surface E' and a transverse shoulder portion E², the front face of the shoulder being concaved as shown at E⁴, the concavity being a rearward and upward continuation of the plane surface E'. Mounted upon the block E is a platform F, the said platform being hollow ground upon the under side of its front projecting edge. This platform is provided with two transversely extending V-shaped ribs F'. Sliding upon the platform is an adjusting plate G, which is transversely slotted as shown at G' and is locked in its adjusted position by set screws G² which work through the slots G' into the platform F. The clamp member H is pivotally mounted above the forming block E and its forward clamping end is adapted to descend toward the platform F and clamp the metal blank laid upon said platform. This clamping operation is indicated in Fig. 6, in which we have shown a blank in position to be clamped by the clamping lever H. The lever H is normally in an inoperative position, the front end being over-balanced by the rear end which rear end carries a cam H'. This cam is engaged by a curved lever J, the upper rear end of which is in position to coöperate with the cam H' and the front end of the lever J is in engagement with the cam J' mounted upon a shaft J². Upon one end portion of this shaft J² is mounted a bifurcated arm K, the said arm having a long bifurcated member K' and the short member K². The extremity of the member K' is slightly flattened upon its inner face to afford a support for the roller D, the member K' normally resting obliquely across one of the slots B.

The spring L is secured at its front end to one of the supporting legs A², and at its rear end is connected to the lever J in such a manner that the said lever will be normally drawn into the position shown in Fig. 4, thus permitting the pivoted clamping member H, to release the blank after the forming operation has been completed.

The arm M is fixed upon the shaft J² and extends downwardly and forwardly in ad-

vance of the frame and has secured to its lower end a weight L' . This weight serves to maintain the shaft J^2 against rotation under the weight of the roller D therefore maintaining the roller D in an elevated position, as shown in Fig. 1, the roller being practically locked with the pinions D' in engagement with the teeth of the rack bars C . A roller is also mounted in the slots B which roller is covered with any suitable absorbent material N , which is saturated with any suitable lubricant and travels in contact with the roller D and by keeping the same oiled prevents marring of the surface of the blank being operated upon.

The operation of the device is as follows:—
The blank O as shown in Fig. 9 is placed in the machine, the straight edge O' being moved rearwardly until it contacts with the adjusting plate G . By sliding the plate G rearwardly and forwardly the size of the pocket to be formed from the blank is regulated, the farther the plate G is pushed to the rear, the deeper the pocket formed for the match safe. The blank O rests upon the V-shaped ribs F' . The handle D^4 is then rotated and the roller D moves down the slots B , swinging the arm K' rearwardly and downwardly, forcing the said arm out of the path of the roller and at the same time, bringing the arm K^2 in position across the slot to block the same upon return movement of the roller. This movement of the part of the arms or members K' and K^2 rocks the arm K and also the shaft J^2 . This actuates the cam J' which forces down the front end of the lever J and lifts the rear end, thus forcing down the forward end of the clamping lever H which grips the blank O . The forming roller D then moves along the slots B' and forces a portion of the blank O into the concavity E^4 of the forming block E . A portion of the blank O is also bent along the dotted line O^2 , which bending forms the crimped portion O^3 shown in Fig. 10. The V-shaped ribs F' form an indented line O^4 upon the blank extending from the straight edge O' to the crimped portion O^3 . The indented line O^4 divides the ends of the match safe from the front side and they can be readily bent back, into position by hand. The rotation of the wheel D^3 is then reversed and as the roller travels back to its normal position it will strike the member K^2 of the arm K and will return the parts to their normal position, thus releasing the blank from the clamping lever H , which operation is also aided by the spring L and also by the fact that the clamping lever H is weighted upon its rear end.

In Fig. 10, we have illustrated the blank O as it appears after it has been operated upon by the machine, the work of completing the match safe being performed by hand.

Having thus described our invention, what

we claim as new and desire to protect by Letters Patent, is:—

1. A device of the kind described comprising a machine having sides provided with angled slots, a forming block having a concaved portion, a roller working in said slots and adapted to enter the concavity, and means actuated by travel of the roller for clamping a blank upon the forming block.

2. A machine of the kind described comprising parallel sides provided with slots, each slot having a vertical and a horizontal portion, rack bars carried by the sides and parallel to the slots, a roller traveling in the slots, pinions carried by the roller engaging the rack bars, a forming block having a concaved portion to receive the roller, said block being arranged adjacent the ends of the horizontal portions of the slots and means for holding a blank upon said block.

3. A machine of the kind described comprising a forming block having a concaved portion, and being provided with a plane surface in advance of the concaved portion, a hollow ground plate mounted upon said forming block and over-hanging the concaved portion and a portion of the plane surface, an adjustable plate mounted upon the first mentioned plate, V-shaped ribs formed transversely upon the first mentioned plate, means for clamping a blank, upon the first mentioned plate and upon the ribs, one edge of the blank being in engagement with the front edge of the adjustable plate, and a roller adapted to move toward and away from the concaved portion of the forming block.

4. A machine of the kind described comprising slotted sides, a shaft, a cam thereon, a bifurcated arm fixed upon the shaft, the bifurcated portion of the arm having members which alternately lie across one of the slots, a roller traveling in said slots and engaging said members, a forming block, a clamping lever and a rocking lever having one end in engagement with the clamping lever and the other end in engagement with the cam.

5. A machine of the kind described comprising a frame having parallel side members, said members being slotted vertically and horizontally, the slots of each side communicating, rack bars carried by the sides and parallel to the slots, a forming roller, pinions carried by the forming roller and traveling upon the rack bars, the forming block having a concaved portion adapted to receive said roller, a clamping lever for holding a blank upon the forming block, a shaft, a cam thereon, a lever having one end in engagement with the clamping lever and the other end in engagement with the cam, and an arm fixed upon the shaft and bifurcated, one member of the bifurcation being longer than the other and extending diagonally across one of the

vertical slots when the parts are in their normal position, a shorter member being drawn across said slot when the longer member is thrown out of position by the roller.

5 6. In a machine of the kind described, a forming block comprising a flat block having a shoulder along its rear edge, the front face of said shoulder being concaved, the concavity being a continuation of the plane portion of the block, a hollow ground plate resting upon the shoulder and projecting in advance thereof, transverse rearwardly extending ribs V-shaped in cross-section formed on said plate, and an adjustable gage plate arranged upon the hollow ground plate and sliding upon said V-shaped ribs:

7. The combination with a forming plate, said forming plate having a concaved portion, of a clamping lever pivoted intermediate its ends and over-weighted at its rear end, a rock lever having its rear end in engagement with the over-weighted end of the clamping lever, a rock shaft, a cam on said shaft in engagement with the forward end of the rock lever, an arm fixed upon said shaft, and a forming roller, said roller swinging the arm and rocking the shaft as it travels to and from the forming block, thereby actuating and releasing the clamping lever, as and for the purpose set forth.

8. A machine of the kind described comprising a frame having sides, said sides being slotted, a roller having a reduced portion and working in the slots, pinions on the roller, rack teeth adjacent the slots engaged by the pinions, a rock shaft, an arm fixed on the rock shaft and bifurcated, one member of the bifurcation extending across one of the slots, when the roller is in its normal position, a cam on the rock shaft, a pivoted lever, a forming block cooperating with the roller, and a clamping lever cooperating with the block, the pivoted lever engaging the clamping lever and the cam, the other member of the bifurcation extending across the slot and in advance of the roller on its return movement.

9. In a machine of the kind described, a forming block, a roller, a clamping lever pivoted intermediate its ends above the forming block, the forward end of the said lever cooperating with the forming block to hold a blank, the rear end portion of the lever being weighted, a cam on said end, a rock shaft, a cam thereon, a lever pivoted between, and in engagement with said cams, and means for rocking the shaft on movement of the roller to and from the forming block.

10. A machine of the kind described comprising slotted sides, a roller traveling in said slots, a forming block, and a lubricating roller mounted loosely in the slots, and traveling in engagement with the first mentioned roller.

11. A machine of the kind described comprising sides, said sides being slotted, a forming block, a roller working in the slots and cooperating with the forming block, a clamping lever cooperating with said block, a rock shaft, an arm on the shaft, said arm having a portion extending across one of the slots and flattened to support the roller, and means connecting the rock shaft and clamping lever.

12. In a machine of the kind described, a frame having slotted sides, a forming block, a clamping lever, a roller working in the slots and cooperating with the clamping lever, a rock shaft, a cam thereon, an arm secured thereto, a weight on the arm, a bifurcated arm connected to the rock shaft and in engagement with the roller, and a pivoted lever having its ends engaging respectively the clamping lever and the rock shaft cam.

13. A machine of the kind described comprising a frame, sides having angled slots, a forming block, a roller working in the slots, a rock shaft, a cam thereon, an arm thereon said arm being bifurcated, the roller alternately engaging the bifurcated members, a lever pivoted between the ends and having its front end in engagement with the cam, a pivoted clamping lever, said lever cooperating with the forming block, the first mentioned lever engaging the clamping lever, and a spring connected to the first mentioned lever.

14. A box forming a machine comprising a forming block having a flat portion and a shoulder portion, the shoulder having a side adjacent the flat portion concaved, a roller, means for guiding the roller to the forming block, and means for clamping a blank in position on the forming block to be operated on by the roller, said clamping means being automatically actuated by the travel of the roller.

15. In a machine of the kind described, a forming block, an adjustable guide plate, a roller, a clamping lever, and means for automatically operating the clamping lever as the roller travels toward the forming block, and for lifting the clamping lever as the roller returns to its normal position.

16. In a machine of the kind described, a forming block, a clamping lever, a traveling roller, a rock shaft, means operated by rotation of the rock shaft for lifting and lowering the clamping lever, and a bifurcated arm fixed on the rock shaft and in the path of the roller, the roller entering the bifurcation as it moves toward the forming block.

WILLIAM F. SMITH.
MARTIN JOHNSON.

Witnesses:

ROBERT T. HUNT,
CHARLES B. HUNT.