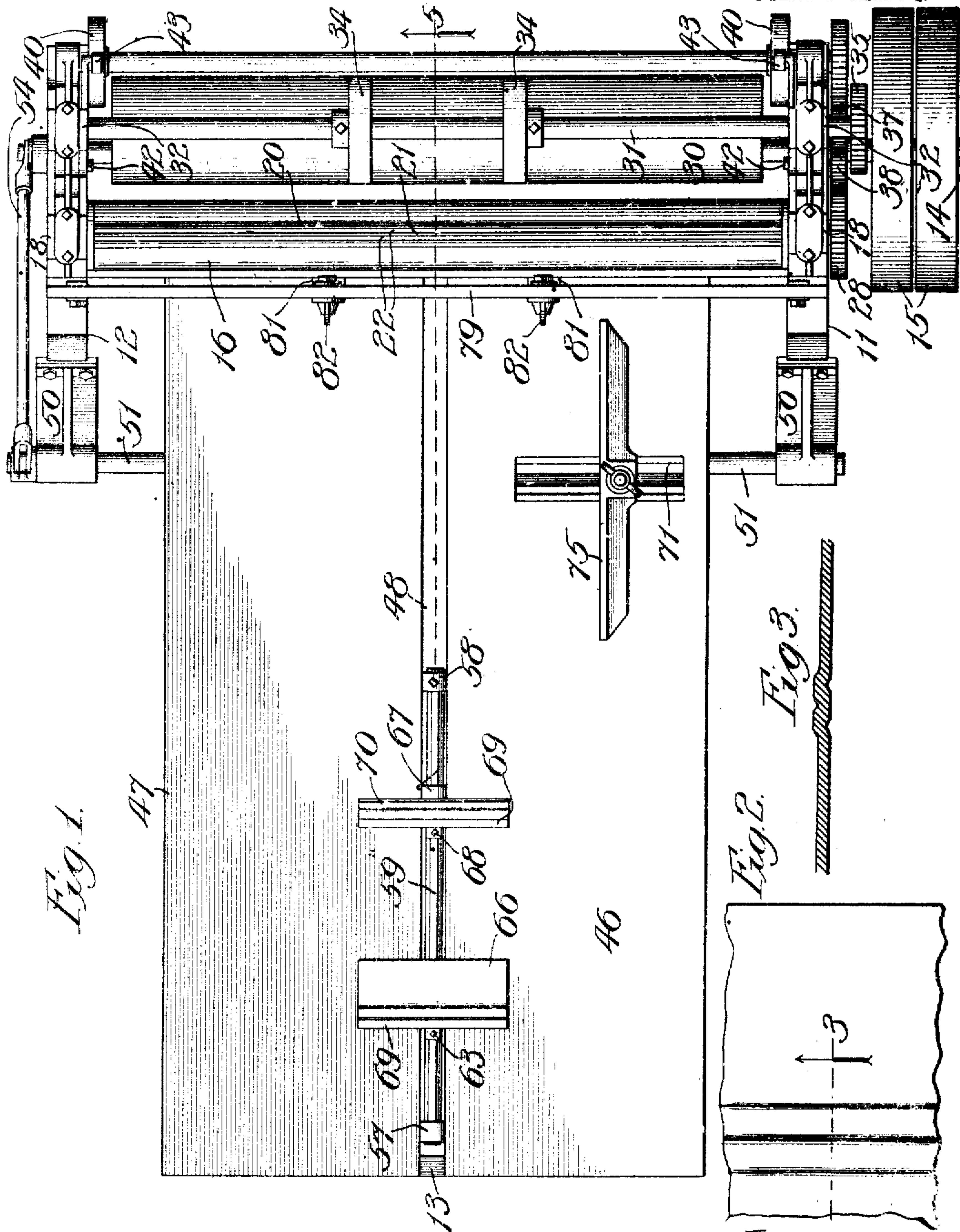


J. F. CLEARY.
CREASING MACHINE.
APPLICATION FILED OCT. 21, 1908.

913,361.

Patented Feb. 23, 1909.

4 SHEETS—SHEET 1.



Witnesses:
John Enders
Chas. H. Buell.

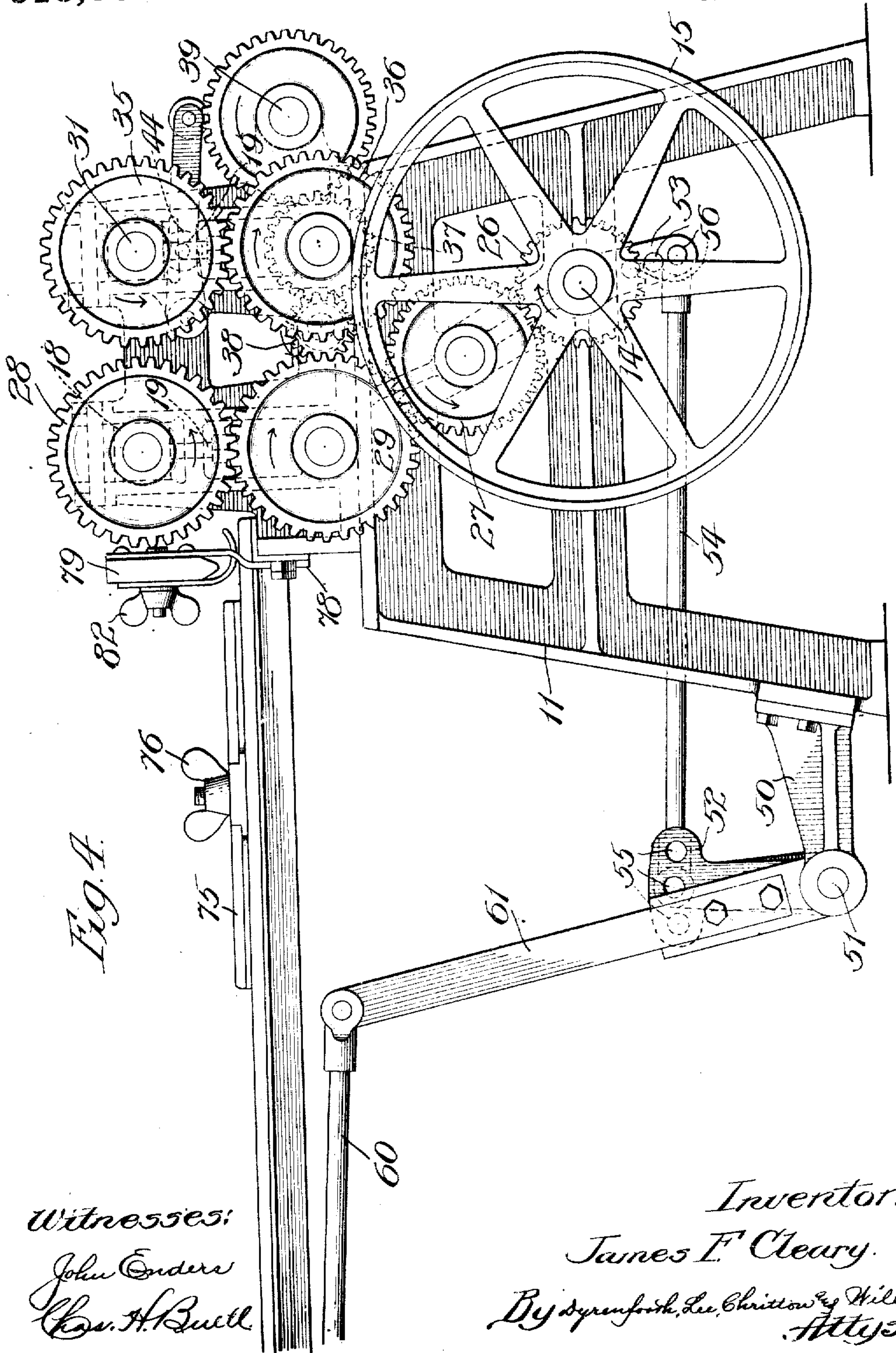
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GREASING MACHINE.
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4 SHEETS—SHEET 2.

913,361.



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4 SHEETS--SHEET 3.

913,361.

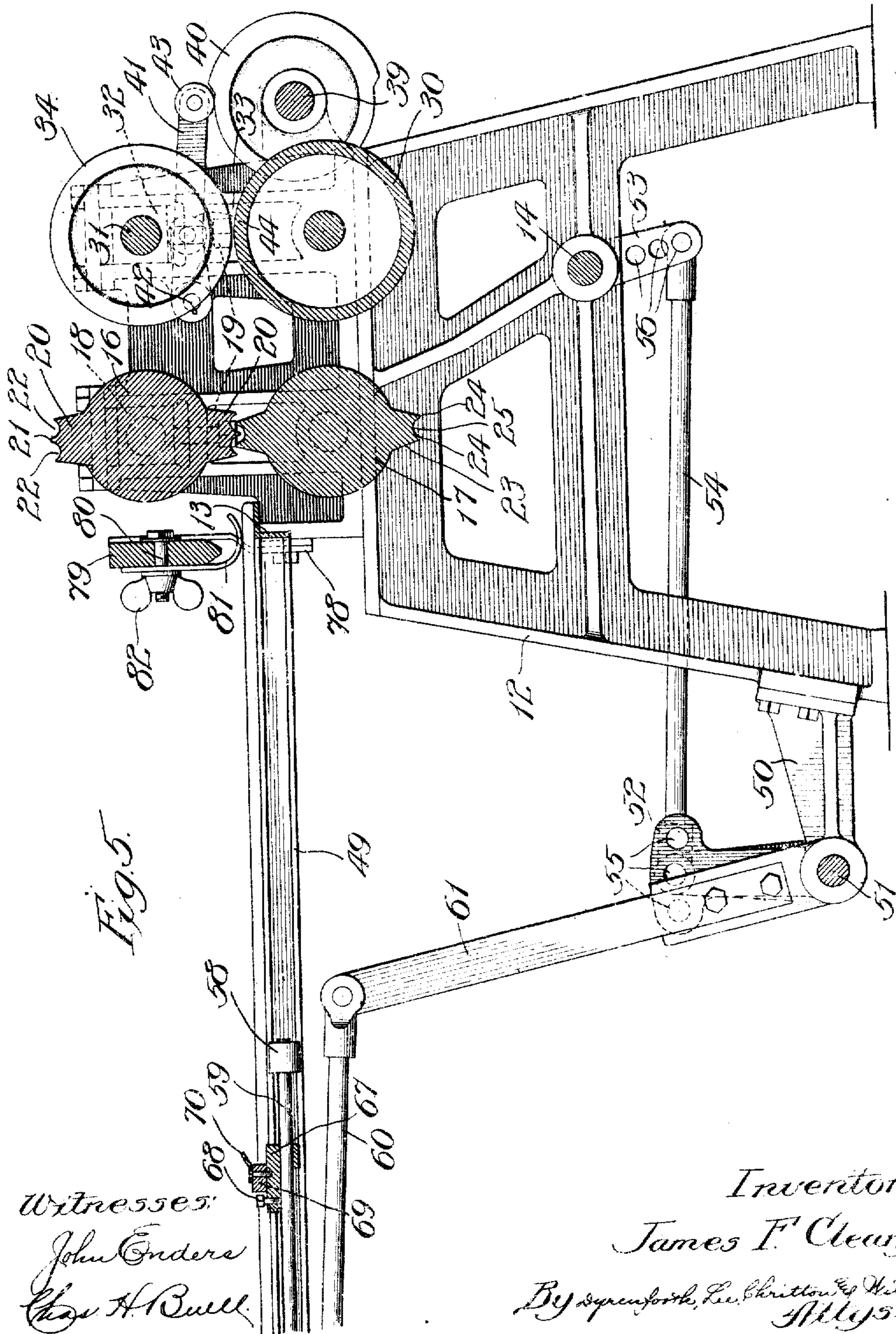


Fig. 5.

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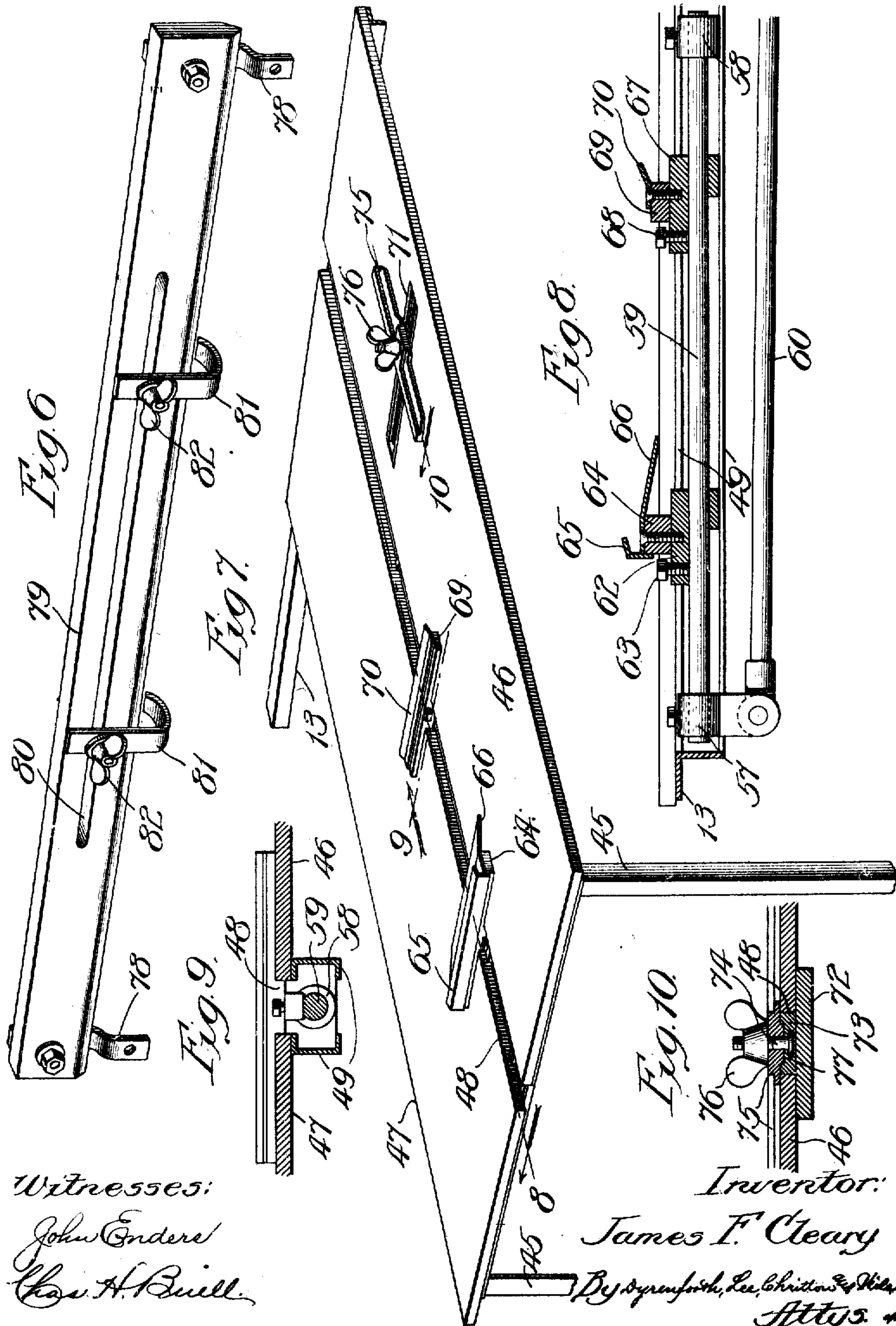
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4 SHEETS—SHEET 4.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES F. CLEARY, OF CHICAGO, ILLINOIS.

CREASING-MACHINE.

No. 913,361.

Specification of Letters Patent.

Patented Feb. 23, 1909.

Application filed October 21, 1908. Serial No. 458,844.

To all whom it may concern:

Be it known that I, JAMES F. CLEARY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Creasing-Machines, of which the following is a specification.

My invention relates to improvement in machines for creasing or scoring sheets of cardboard, and the like, more especially for the production of paper-box blanks.

My object is to provide a machine of improved and particularly simple construction which will operate to crease or score the sheets with great accuracy and rapidity.

In carrying out my invention I provide a pair of cooperating scoring-rolls which operate upon the sheet transversely of the path of travel of the latter, a feed-table equipped with adjustable reciprocating feed-mechanism adapted to advance and position the sheet between the scoring-rolls, and intermittently actuated gripping-rollers operatively timed to engage and discharge the sheet when the scoring or creasing thereof is completed.

Referring to the drawings—Figure 1 is a plan view of my improved machine; Fig. 2, a plan view of a section of the creased or scored sheet; Fig. 3, a section taken on line 3 in Fig. 2; Fig. 4, a broken side elevation of the machine; Fig. 5, a broken section taken on line 5 in Fig. 1 and enlarged; Fig. 6, a perspective view of a bar provided with adjustable spring presser-fingers; Fig. 7, a perspective view of the feed-table and reciprocating sheet-feeders thereon; and Figs. 8, 9 and 10, enlarged broken sections taken, respectively, on lines 8, 9 and 10 in Fig. 7, and viewed as indicated by the arrows.

11 and 12 are the sides or cheeks of the machine, and 13, a cross-bar in the position shown. The drive-shaft 14 is journaled toward opposite ends in the cheeks and carries fast and loose pulleys 15.

16 and 17 are, respectively, upper and lower scoring or creasing rolls provided at opposite ends with journals supported in bearings in the said cheeks. The journals of the upper roller rotate in journal-boxes 18 supported on adjusting screws 19. The upper roll is provided with or carries at diametrically opposite sides projecting dies 20 formed, as shown, with a central projection 21 between two concave depressions 22. The lower roll is provided or formed with dia-

metrically opposed projecting dies 23, each presenting parallel projections 24, with a concave depression 25 between them.

On the shaft 14 beyond the cheek 11 is a gear-wheel 26 engaging an idle gear-wheel 27 journaled on a stub-shaft on the cheek 11. The roll 16 carries a gear-wheel 28, and the roll 17, a gear-wheel 29. The gear-wheels 28, 29 are of the same size and intermesh, the gear-wheel 29 also meshing with the idle-gear 27. The rolls thus rotate at exactly the same speed and the dies which they carry cooperate in the manner indicated in Fig. 5.

30 is a lower discharging roll journaled at opposite ends in the cheeks in the position shown. Centrally above the roll 30 is a shaft 31 journaled at opposite ends in vertically movable journal-boxes or cross-heads 32 working in guide-openings 33 in the cheeks. The shaft 31 carries a pair of upper discharge-rollers 34 which may be adjusted toward and away from each other on the shaft and fastened in adjusted position. Beyond the cheek 11 the shaft 31 carries a gear-wheel 35 which meshes with a gear-wheel 36 on the roll 30. The roll 30 also carries a pinion 37. Between and engaging the gear-wheel 29 and pinions 37 is an idle-pinion 38. A shaft 39 journaled in the cheeks beyond the roll 30 is provided near opposite ends with cams 40. At each cheek is a lever 41 fulcrumed at 42 and provided at its free end with a roller 43 riding upon the adjacent cam 40. The cross-heads or journal-boxes 32 rest normally on adjusting screws 19, and the levers 41 carry rollers 44 adapted to bear against the under surfaces of the parts 32.

Resting at its rear end upon the bar 13 and at its forward end upon legs 45 is a feed-table formed of parallel plates 46, 47 separated by a central longitudinal guide-slot 48. Beneath the adjacent edges of the plates 46, 47 are parallel depending channel-bars 49 forming between them a guide. Journaled in brackets 50 on the cheeks is a rock-shaft 51 provided at its end adjacent to the cheek 12 with a crank-arm 52. On the shaft 14 adjacent to the cheek 12 is a crank-arm 53. Extending between the crank-arms 52, 53 is a connecting rod 54 provided at each end with a laterally-extending wrist-pin. In the crank 52 is a series of openings 55 to receive the wrist-pin at that end of the connecting-rod; and in the crank 53 is a

series of openings 56 adapted to receive the wrist-pin at the other end of the connecting-rod.

Fitting and sliding in the guide formed by the channel-bars 49 are blocks 57 and 58 fixed to opposite ends of a longitudinally movable rod 59. The block 57 is pivotally fastened to one end of a connecting-rod 60 which, at its opposite end, is pivotally connected to the upper end of an arm 61 carried by the rock-shaft 51. Sliding in the guide-slot 48 is a block 62 fitting around the rod 59 and adjustably fastened thereto by means of a set-screw 63. The block 62 carries a bar 64 which slides upon the surfaces of the plates 46, 47 and carries a sheet-edge-engaging plate or clip 65 and a scooping-plate 66. Also in the slot 48 is a block 67 having an opening through it to receive the shaft 59 and adjustably fastened to the shaft by means of a set-screw 68. The block 67 carries a bar 69, which slides upon the table-top, and on the bar is a paper-edge-engaging clip 70. In the plate 46 is a transverse slot 71 closed at its under side by a stationary plate 72 and fitted with a filler-bar 73 resting on the plate 72. The bar 73 contains a T-slot to receive the head of a bolt 74 and on the plate is a paper-edge guide-bar 75 resting on the surface of the plate 46. The bolt carries a thumb-nut 76. The guide-bar 75 has a boss 77 on its under side fitting a longitudinal recess in the upper surface of the bar 73. The guide 75 may be moved toward and away from the slot 48 and tightened in adjusted position by means of the thumb-screw 76. The engagement of the boss 77 with the recesses in the bar 73 maintains the guide at a right-angle to the slot 71 and parallel with the slot 48.

The machine as herein illustrated is adapted more especially for scoring or creasing sheets of cardboard to produce paper box-blanks, of which two are required to form a box, in the well known manner.

The machine is driven by power applied to the fast pulley 13, and in the rotation of the drive-shaft 14 the shaft 51 is rocked to vibrate the arm 61 and reciprocate the rod 59.

Each sheet of cardboard as it passes through the machine is to be scored or creased twice, and the feeder having the paper-engaging clip 65 is so adjusted upon the rod 59 that in the backward movement of the latter a sheet engaged by the clip 65 will be moved between the rolls 16 and 17 to the proper position to receive the first crease or score; the bar carrying the clip 70 being so adjusted along the rod 59 that in the next backward movement of the latter the sheet will be moved between the rolls 16 and 17 and properly positioned to receive the second crease or score.

Fastened against the cheeks 11, 12 are

upwardly extending brackets 78 carrying a cross-bar 79 above the rear end-portion of the feed-table. In the bar 79 is a longitudinal slot 80 in which are adjustably fastened spring presser-fingers 81 by means of bolts having thumb-nuts 82. These presser-fingers bear against the upper surface of the sheet of cardboard fed into the machine and operate to hold it steady while the sheet-feeders are moving toward the forward end of the feed-table and until the sheet is engaged by the scoring-dies. Thus, the parts being adjusted as described, when a sheet is placed upon the table against the guide 75 it is engaged in the first backward movement of the rod 59 by the feed-clip 65 and thrust to the desired extent between the scoring-rolls while the dies of the latter are turning out of coincidence. Here the sheet is held by the presser-fingers 81. As the companion dies come together in the manner shown, the sheet is creased transversely while the feed-clip 70 is moving under and beyond it. In the next backward movement of the rod 59 the clip 70 engages the sheet and thrusts it to proper position for receiving the second crease or score.

The journal-boxes or cross-heads in which the shaft 31 is journaled extend over the rollers 44 upon the levers 41 which ride at their rollers 43 upon the cams 40. In the present construction the cams 40 are rotated at the same speed as the scoring-rolls and the upper and lower discharge-rolls at, say, twice that speed, and during one complete revolution of the scoring-rolls, while the sheet is being scored, the cams 40 raise the levers 41 and upper discharge-rollers 34 out of contact with the sheet; while during the next revolution of the scoring-rolls, after the sheet has been scored, the reduced portions of the cams pass beneath the rollers 43 permitting the upper feed-rollers to drop and clamp the sheet against the roll 30, whereby the sheet is quickly discharged from the machine. It will be understood, therefore, that in the present machine a sheet is scored in one revolution of the scoring-rolls and during the next revolution of the said rolls it is discharged and another sheet is placed upon the table to be operated upon as described.

The holes 55 in the crank 52 and holes 56 in the crank 53 permit the connecting-rod 54 to be adjusted to change the throw of the rod 59 as desired, to regulate the distance of feed of the sheet in each instance. This adjustment, with the adjustment of the feed-bars 64, 69 upon the rod is sufficient to make it possible to operate upon sheets of different dimensions and to place the scores in any desired locations on the sheets. By providing suitable cams 40 and changing the gearing in a manner which would readily suggest itself to a skilled mechanic, the ma-

chine may be adapted to score a sheet say four times instead of twice between the discharging operations of the discharge-rollers.

When it is desired to score a sheet say four times instead of twice, additional feed-bars 69 and attendant parts may be placed upon the bar 59 to operate in succession in the manner described.

The modifications described and others may be made without departing from the spirit of my invention as defined by the claims.

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

1. In a sheet-creasing machine, the combination with rotary, intermittently cooperating creasing-dies, of sheet-discharging rollers, a feed-table, a plurality of reciprocating sheet engaging and thrusting feeders, on the table, constructed and arranged successively to engage a sheet placed upon the table and advance it between the creasing-dies, and actuating means for the said discharging-rollers operatively timed to cause the rollers to engage and discharge the sheet on completion of the creasing operations upon the sheet.

2. In a sheet-creasing machine, the combination with rotary, intermittently cooperating creasing-dies, of constantly rotating sheet-discharging rollers, a feed-table, a plurality of reciprocating sheet engaging and thrusting feeders, on the table, constructed and arranged successively to engage a sheet placed upon the table and advance it between the creasing-dies, and cam-actuated discharge-roller shifting means operatively timed to cause the rollers to engage and discharge the sheet on completion of the creasing operations upon the sheet.

3. In a sheet-creasing machine, the combination with rotary, intermittently cooperating

creasing-dies, of sheet-discharging rollers, a feed-table, a plurality of reciprocating sheet engaging and thrusting feeders, on the table, constructed and arranged successively to engage a sheet placed upon the table and advance it between the creasing-dies, sheet engaging presser-fingers between the feeders and dies, and actuating means for said discharging-rollers operatively timed to cause the rollers to engage and discharge the sheet on completion of the creasing operations upon the sheet.

4. In a sheet-creasing machine, the combination with rotary, intermittently cooperating creasing-dies, of sheet-discharging rollers, relatively adjustable reciprocating sheet engaging and thrusting feeders, on the table, constructed and arranged successively to engage a sheet placed upon the table and advance it between the creasing-dies, and actuating means for the said discharge-rollers operatively timed to cause the rollers to engage and discharge the sheet on completion of the creasing operations upon the sheet.

5. In a sheet-creasing machine, the combination with rotary, intermittently cooperating creasing-dies, of sheet-discharging rollers, a feed-table, a plurality of relatively adjustable reciprocating sheet engaging and thrusting feeders, on the table, constructed and arranged successively to engage a sheet placed upon the table and advance it between the creasing-dies, means for adjusting the throw of the said feeders, and actuating means for the said discharge-rollers operatively timed to cause the rollers to engage and discharge the sheet on completion of the creasing operations upon the sheet.

JAMES F. CLEARY.

In presence of—

J. G. ANDERSON,
R. A. SCHAEFER.