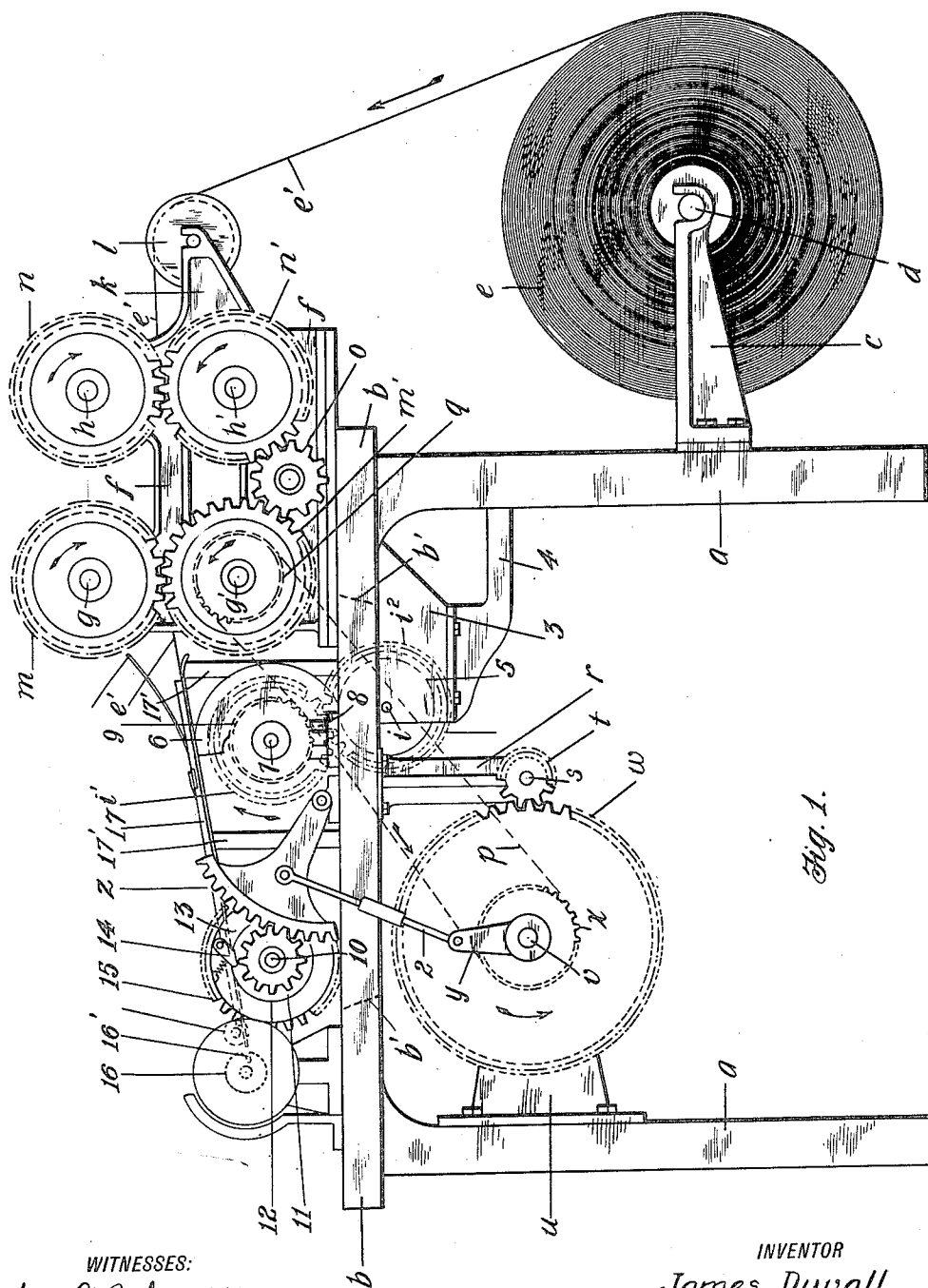


J. DUVALL.
MACHINE FOR MAKING CORES FROM A ROLL OF PAPER.
APPLICATION FILED APR. 23, 1915.

1,206,754.

Patented Nov. 28, 1916.
4 SHEETS—SHEET 1.



WITNESSES:
Wm. P. Schmitt
D. E. Brabb

INVENTOR
James Duvall.

BY
J. F. Geisler
ATTORNEY

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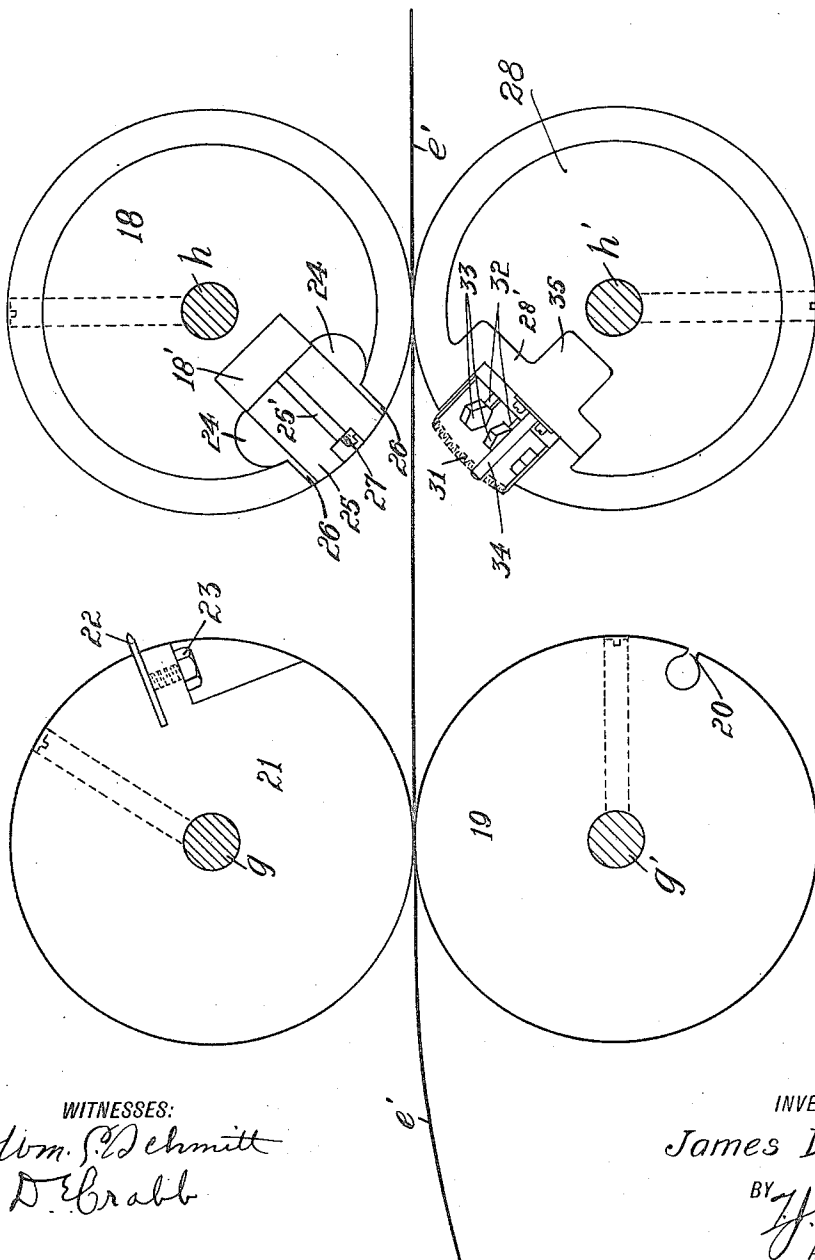


Fig. 2.

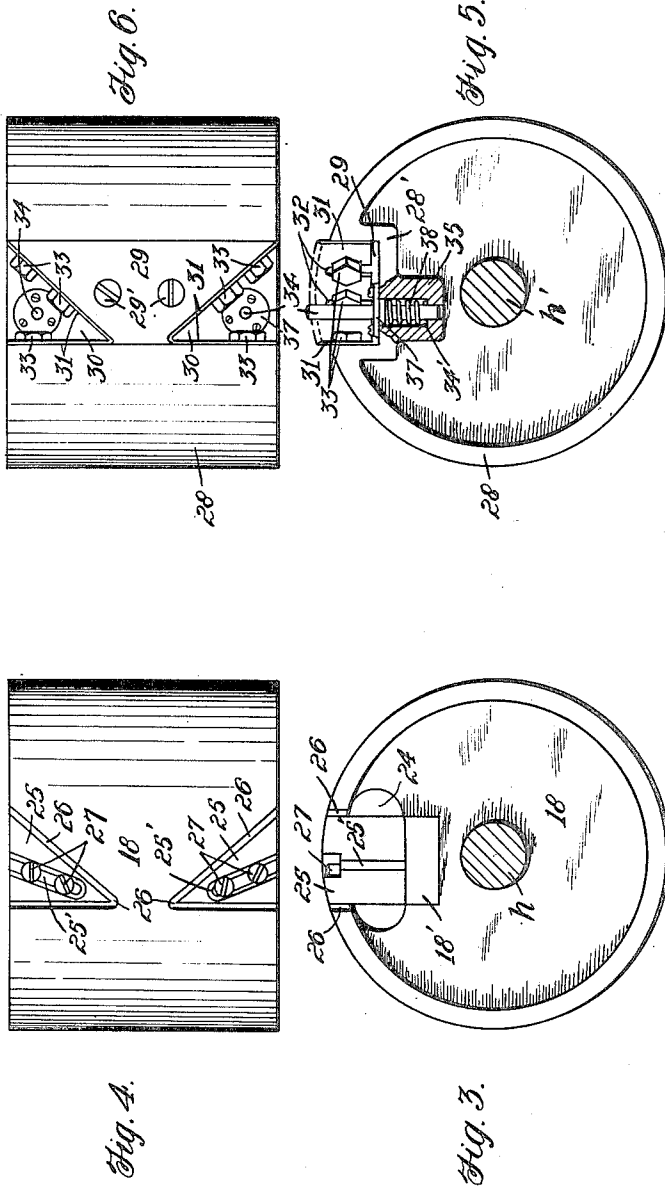
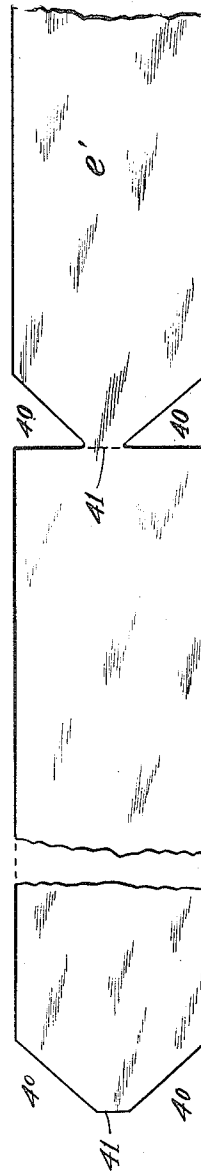
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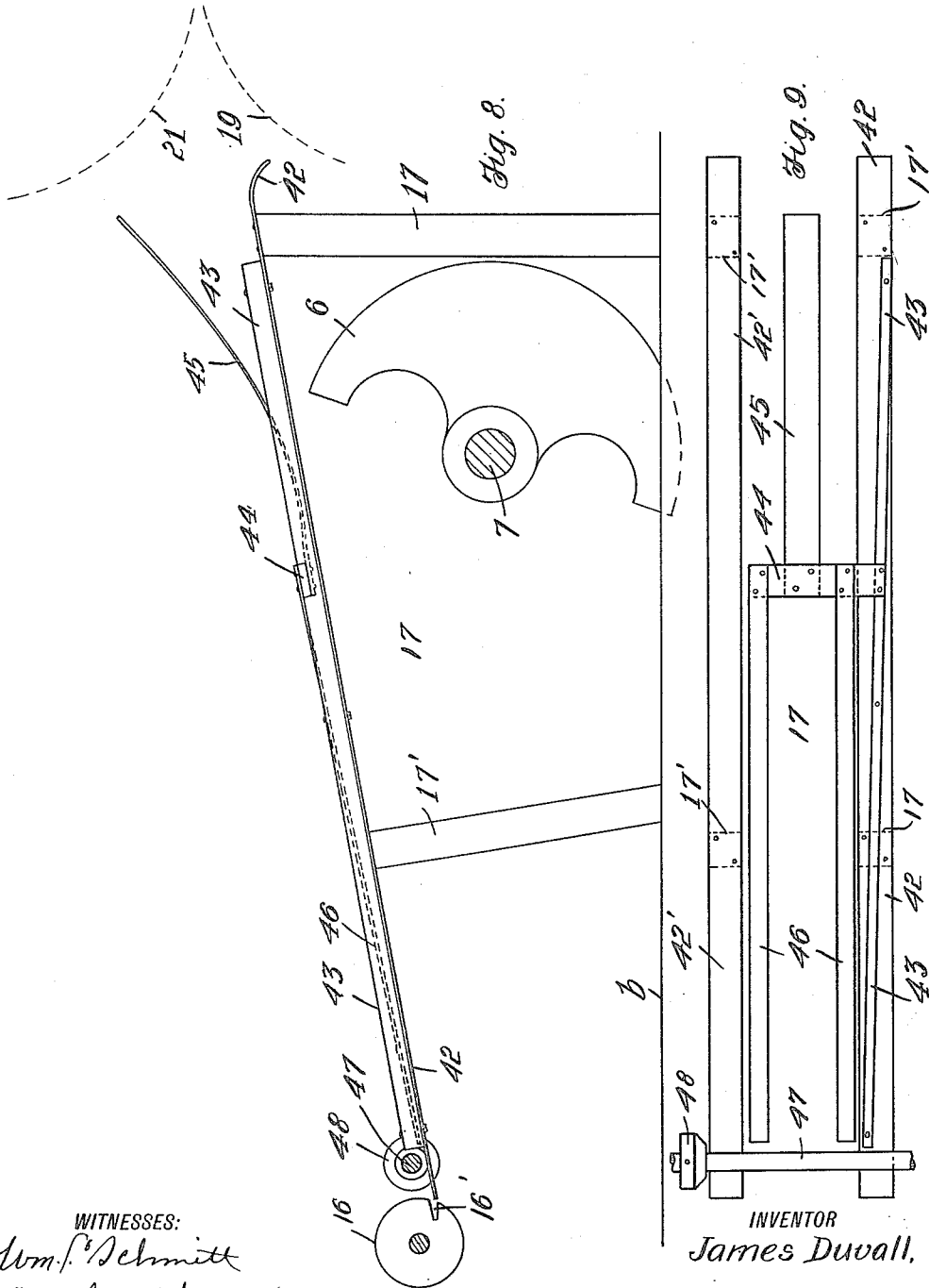
WITNESSES:
Wm. F. Dehnitt
D. E. Crabb

INVENTOR
James Duvall.
BY *J. Geisler*
ATTORNEY

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D. E. Brabb

INVENTOR
James Duvall,

BY *J. G. Giesler*
ATTORNEY

UNITED STATES PATENT OFFICE.

JAMES DUVALL, OF CAMAS, WASHINGTON.

MACHINE FOR MAKING CORES FROM A ROLL OF PAPER.

1,206,754.

Specification of Letters Patent. Patented Nov. 28, 1916.

Application filed April 23, 1915. Serial No. 23,523.

To all whom it may concern:

Be it known that I, JAMES DUVALL, a citizen of the United States, and a resident of Camas, Clarke county, Washington, have invented a new and useful Improvement in Machines for Making Cores from a Roll of Paper, of which the following is a specification.

This invention relates to machines for making cores and has specifically to do with improvements in rotary cutters of machines for making cores from a roll of paper on which to wind another roll of paper.

One of the main objects of my invention is to provide a rotary cutting mechanism for the preparation of strips or blanks of paper to be automatically wound on a core-winder roll in the manufacture of paper cores.

To attain my object I have invented an improvement in rotary cutters whereby greater perfection in result can be accomplished than heretofore, and at the same time embodying extreme simplicity in the rotary cutting device.

In the accompanying drawings, constituting a part of this specification, Figure 1 is a side elevation showing the general arrangement of the machine in connection with which my device is used. Fig. 2 is a large scale elevation of that portion of my machine which comprises one of the features of my invention, viz. the draw rolls by which the blank of suitable length is cut off from the strip, and by which the leading end of the strip to be cut off is shaped to enter the core-winder roll; Fig. 3 is a side elevation of the upper of the draw-rolls, by which the shaping of the leading end of the blank is effected; Fig. 4 is a plan view of the same roll; Fig. 5 is a side elevation of the lower of said draw rolls; Fig. 6 is a plan view of such draw roll; Fig. 7 is a plan view of the strip of paper showing the manner in which the blank is formed; Fig. 8 is a side elevation in diagram form of the guide-way by means of which the blank is guided to the core-winder roll; and Fig. 9 is a partial plan view of the devices shown in Fig. 8.

a represents the legs of my machine, and b is the bed-plate of same, said bed-plate being made with a longitudinal slot b' . On the front legs of my machine, (see Fig. 1) are the brackets c , in which is removably mounted an arbor d , carrying a roll of paper

e . Mounted on the front end of the bed-plate b are parallel frame members f , running longitudinally of the machine, and in which are journaled the transverse shafts g , g' and h , h' , that carry the cut-off and draw rolls respectively. See Fig. 2. The frame members f are provided at their forward end with projecting arms k , in which is rotatably mounted a flanged guide pulley l . Gears m , m' and n , n' are fixed on the shafts g , g' and h , h' respectively, and said gears mesh with and drive each other in the direction indicated by the arrows in Fig. 1, through the medium of an intermediate gear o . Said gear train receives its primary motion through a chain drive p , which runs over a sprocket q , the latter being fixed on the shaft g' . A bracket r is supported beneath the bed-plate b of the machine and rotatably mounted in said bracket is a power shaft s , on which is fixed a gear t . Power may be applied to shaft s in any convenient manner desired. At the rear legs of the machine is bolted a bracket u and rotatably mounted therein is a shaft v , on which is fixed the gear w , sprocket x and the crank arm y . The drive chain p runs over the sprocket x , the gear w meshes with and is driven by the gear t and the crank arm y forms a medium for transmitting an oscillating motion to a sector gear z , through the medium of a connecting rod 2, all parts being driven in the direction indicated by the arrows in Fig. 1. A paste pan 3 is mounted on a bracket 4, beneath the bed-plate b , and 5 is a paste roll, rotatably mounted on a shaft i , in said pan, said paste-roll projecting up through the slot b' . A paster sector 6 is fixed on a shaft 7, the latter being journaled in brackets 8. A sprocket 9 is also fixed on said shaft 7 and the chain drive p transmits rotary movement to said paster sector in the direction indicated through the medium of said sprocket 9. Driving gears i' and i'' connect the shafts 7 and i so that the latter are positively driven. Near the rear end of the machine is mounted a transverse shaft 10, on which is fixed a pinion 11, meshing with and driven by a sector gear z ; also fixed on shaft 10 is a one tooth ratchet wheel 12. Loosely mounted on shaft 10, adjacent the ratchet wheel 12, is a disk 13, carrying a pawl 14, and fixed to the disk 13 is a gear 15 adapted to drive the core winder roll 16, the slot of which is indicated

by 16'. A guide-way 17 is supported on legs 17', the details of this guide-way being shown in Figs. 8 and 9.

It will be observed by referring to Fig. 1 that the paper strip *e'* runs over the guide pulley 1, carried through the draw and cut-off rolls as shown in Fig. 2, and thence to the core winder roll 16, the latter being intermittently driven by means of the crank movement transmitted from the constantly driven gear *w*, so as to thereby form the core.

The core-winder mechanism and means for operating same are of the well-known usual construction, and are, therefore, not detailed herein, as they form no part of this invention, and are referred to briefly only for the purpose of showing their association with the parts which form my invention. The draw-roll and cut-off rolls, which comprise my invention are shown in assembled form in Fig. 2 and in detailed form in Figs. 3 to 6 inclusive.

Having reference to Fig. 2, the lower cut-off roll 19 is fixed on shaft *g'* and said roll is provided with a face groove 20, adapted to receive the cut-off blade. The upper cut-off roll 21 is fixed on the shaft *g*. Said roll carries the cut-off blade 22, which is fixed in said cut-off roll by means of the set screws 23. The upper draw roll 18 is fixed on the shaft *h*. Said draw roll is provided with triangular shaped recesses 24, and the web of said roll is provided with lugs 18' located at the base of said recesses. Filler blocks 25 are also triangular in shape, and are adapted to be adjustably fixed in the recesses 24 so as to leave triangular grooves 26, adapted to receive the blades of the lower draw roll. The blocks 25 are provided with medial countersunk slots 25' adapted to receive the studs 27, by means of which the blocks are fixed on the lugs 18', and these slots 25' at the same time allow said blocks to be adjusted inwardly or outwardly so as to thereby make the grooves 26 narrower or wider. The lower draw roll 28 comprises a flanged roll fixed on shaft *h'*. Said roll 28 has a longitudinal section cored out, the base of which is made with lateral lugs 28', and a filler block 29 is bolted on the lugs 28' in said cored out section by bolts 29', these latter being countersunk. (See Fig. 6.) The filler block 29 is made with beveled ends, so that when the filler block is fixed in place, these beveled ends will form with the sides of the cored out section of the roll two triangular shaped recesses 30. A cutter blade 31, provided with vertical adjusting slots 32, is adjustably fixed by studs 33 to the faces of the recesses 30. Mounted centrally within the triangular recesses 30 are the waste ejecting members. Each of said members comprises a rod 34 which is inserted in a drilled hole 34' of the lug 35.

(See Fig. 5.) The rod 34 is provided with a collar and a restraining plate 37 screwed to the top face of the lug 28', which plate limits the upward movement of said ejector member. A compression coil spring 38 is placed around the shank of the ejecting rod within said hole 34'. The action of this portion of the machine is as follows: As the draw rolls 18 and 28 revolve (see Fig. 2) they will pull the paper strip *e'* forward to the left, at the same time cutting out the triangular portions indicated by the numeral 40 in Fig. 7, these waste portions being automatically ejected from the roll 28 as soon as the blades 31 withdraw from the grooves 26. As the strip *e'* passes between the cut-off rolls 19 and 21, the strip will be severed along the line 41. The shape of the resulting blank is then apparent by inspection of Fig. 7.

Referring to Figs. 8 and 9, the guide-way 17, comprises two parallel inclined ways 42 and 42' rigidly mounted on the legs 17' and extending to a point in alinement with the core winder roll slot 16'. A side bar 43 is fixed on the way 42, and is adjustably inclined toward the center line of the ways. A transverse bar 44 is fixed on the bar 43, and a spring arm 45, located centrally between the ways 42 and 42' is fixed on the bottom of the bar 44. Said arm 45 is curved upwardly at its free end (see Fig. 8), so that the strip *e'* will be stripped from the roll 21 as said strip passes from the cut-off rolls. Furthermore, said arm 45 will direct the strip *e'* down against the paster sector 6. Parallel spring arms 46 are fixed on the top of the arm 44, and extend to a point in line with the lower end of the side bar 43.

A transverse breaker shaft 47, provided with a beveled disk 48, directs the strip *e'* so that it will always be directed precisely into the slot 16' of the core-winder roll 16.

I claim:

1. In a machine of the character specified, the combination of a pair of cooperating draw rolls, a knife on the periphery of one roll, and the other roll being provided with a slot adapted for receiving said knife, one side of which slot is adjustable to the other side.

2. In a machine of the character specified, the combination of a pair of cooperating draw rolls, an angular knife on the periphery of one roll, and the other roll being made with an angular cavity the wall of which forms the fixed side of a slot for receiving said knife, the opposite wall or side of said slot being formed by a member, in said cavity, adapted for adjustment relatively to, but in parallel alinement with, said fixed side.

3. In a machine of the character specified, the combination of a pair of cooperating

draw rolls, a radially adjustable angular knife on the periphery of one roll, and the other roll being made with an angular cavity the wall of which forms the fixed side
5 of a slot for receiving said knife, the opposite wall or side of said slot being formed by a member, in said cavity, adapted for adjustment relatively to, but in parallel alignment with, said fixed side.

10 4. A machine of the character specified, comprising a pair of cooperating rolls one thereof made with a cavity, a knife secured to the wall of such cavity, the other roll being made with a slot adapted for receiving
15 said knife, one side of which slot is adjustable to vary the width of the slot, automatic means located in the cavity of the knife-carrying roll for ejecting the cut-out portion deposited therein, such means being
20 adapted to be placed in active state by the rolling of the rolls into cutting position

and acting when the rolls have passed such position, and means for driving said rolls.

5. A machine of the character specified comprising a pair of cooperating rolls one
25 thereof made with an angular cavity, an angular knife secured to the wall of such cavity, the other roll being made with a slot adapted for receiving said knife, one side of which slot is adjustable to vary the
30 width of the slot, automatic means located in the cavity of the knife-carrying roll for ejecting the cut-out portion deposited therein, such means being adapted to be placed
35 in active state by the rolling of the rolls into cutting position and acting when the rolls have passed such position, and means for driving said rolls.

JAMES DUVALL.

Witnesses:

WM. C. SCHMITT,
D. E. CRABB.