No. 674,472. Patented May 21, 1901.

C. E. SACKETT.

MACHINE FOR CUTTING FUR FROM PELTS.

(Application filed Apr. 27, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig 1

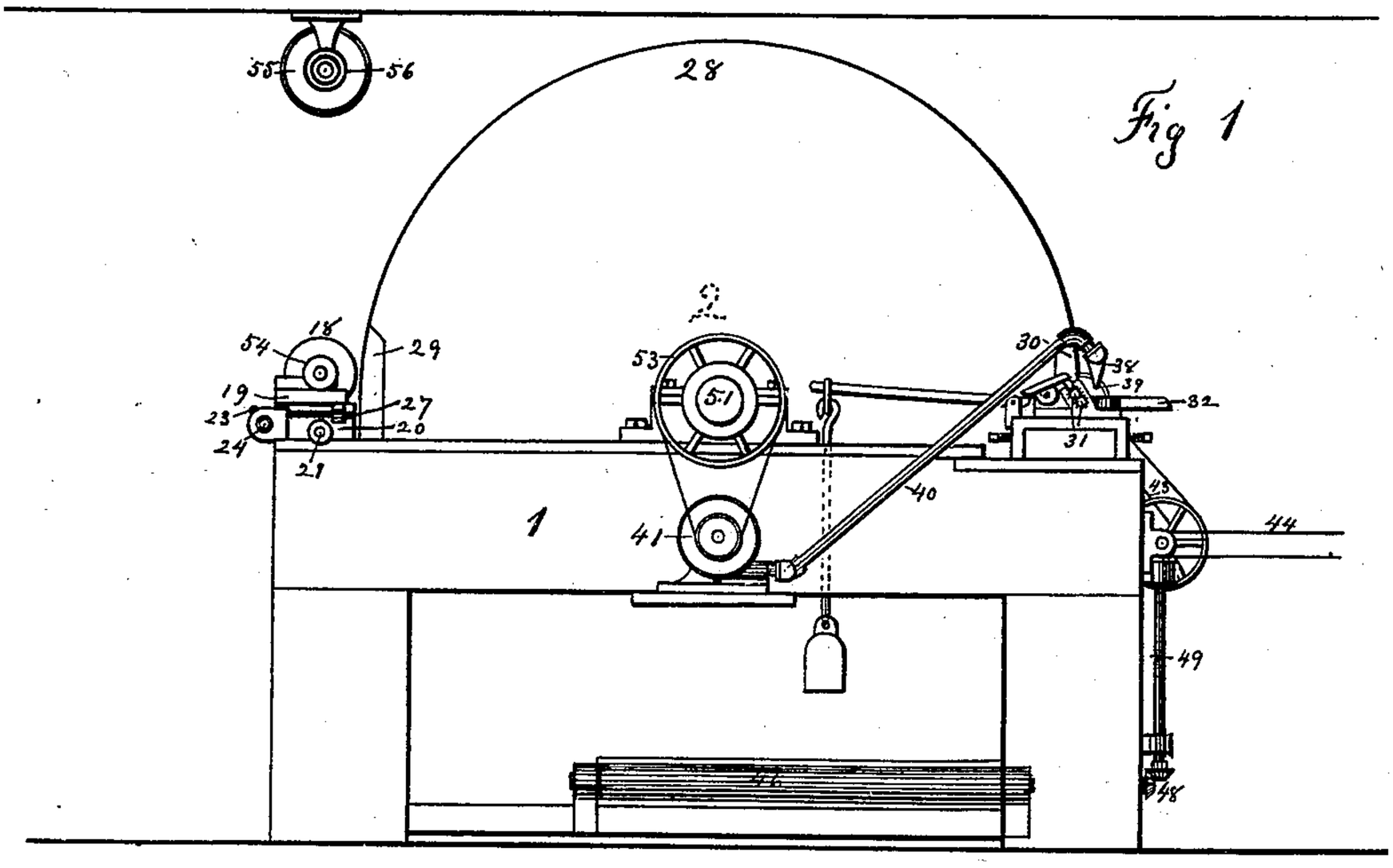
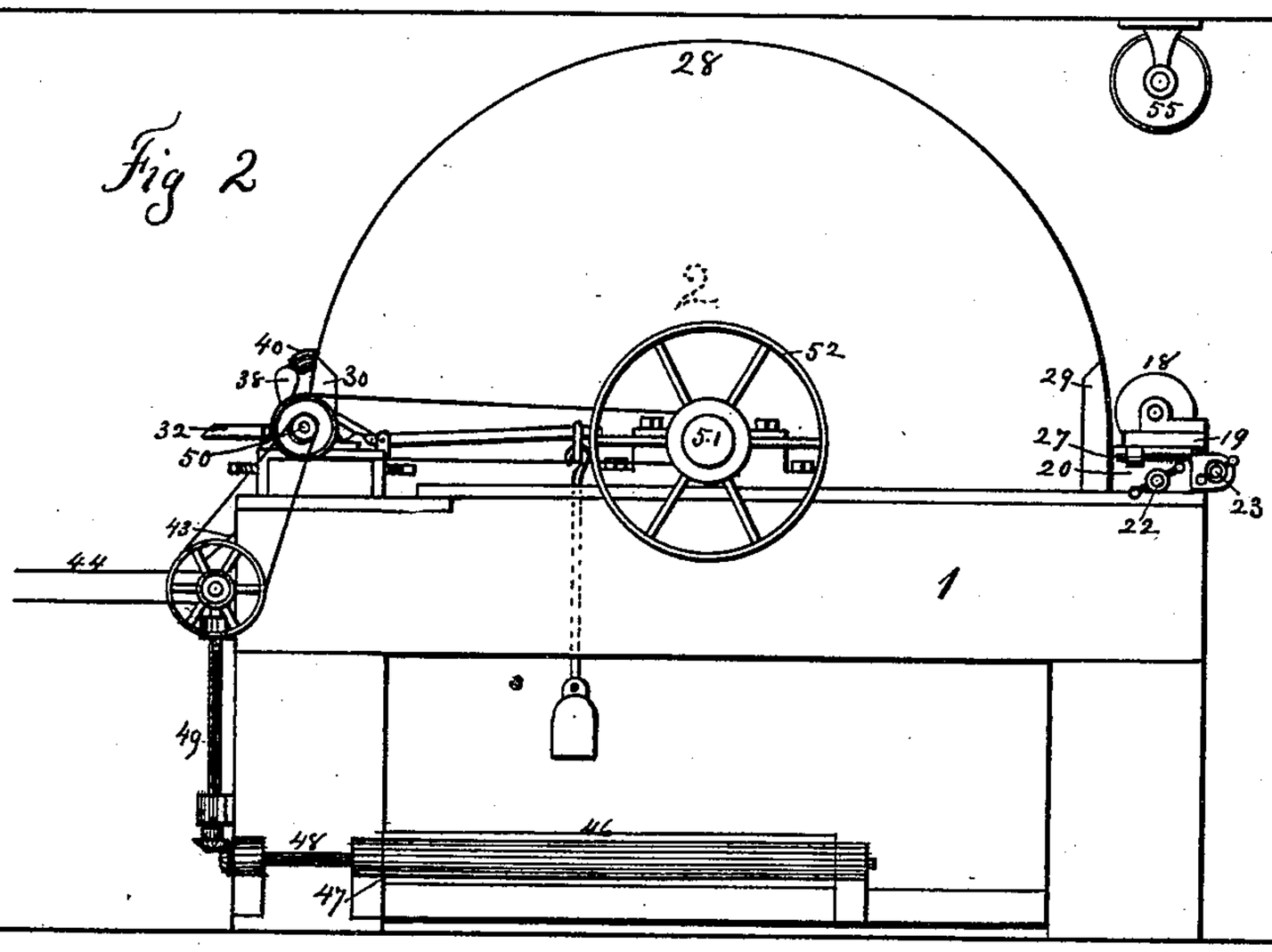


Fig 2



WITNESSES

Samuel H. Fairchild

Bronson S. Burr.

INVENTOR

Chas E Sackett

No. 674,472. Patented May 21, 1901.

C. E. SACKETT.

MACHINE FOR CUTTING FUR FROM PELTS.

(Application filed Apr. 27, 1900.)

(No Model.) 4 Sheets—Sheet 2.

Fig 3

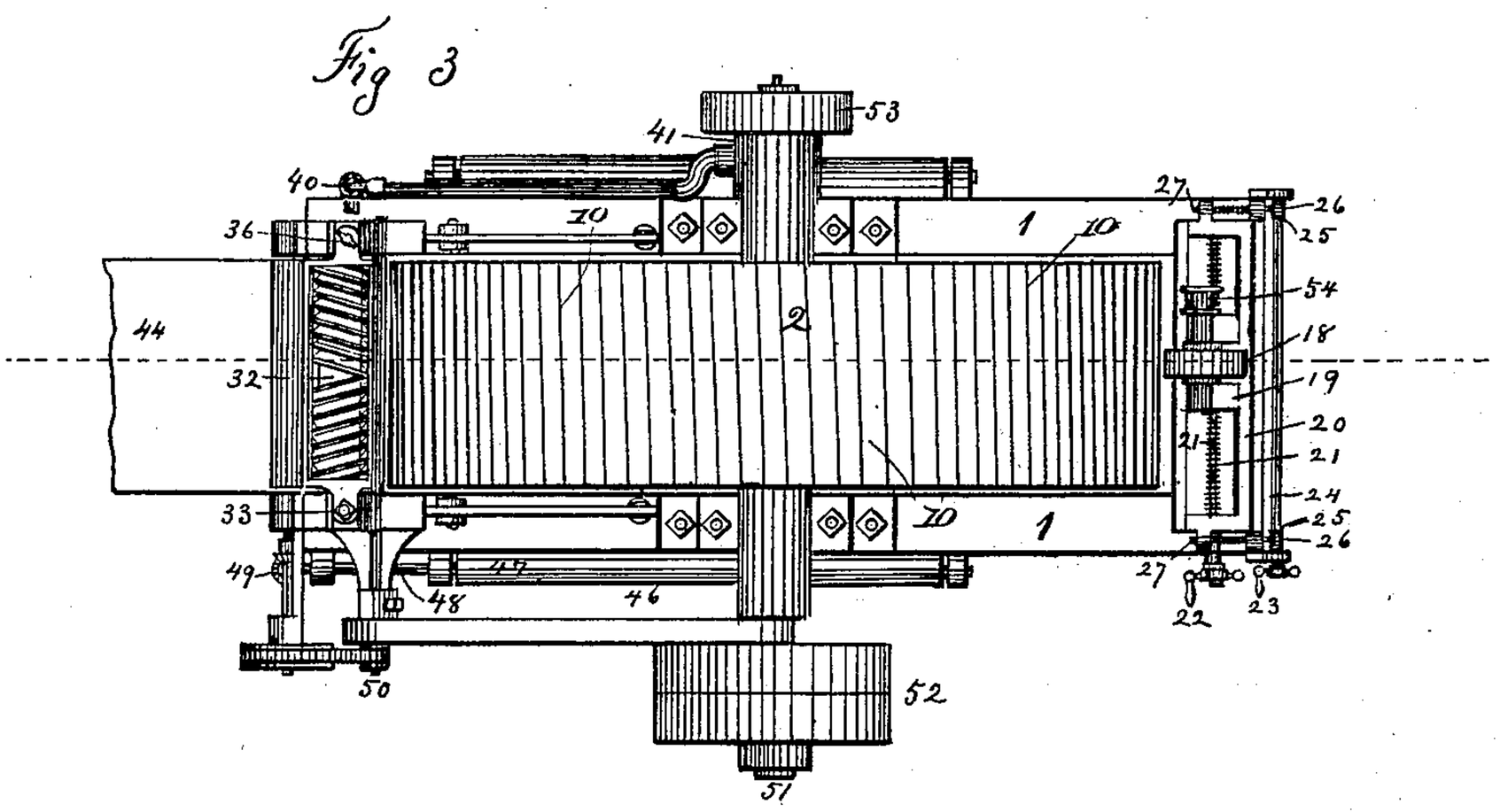
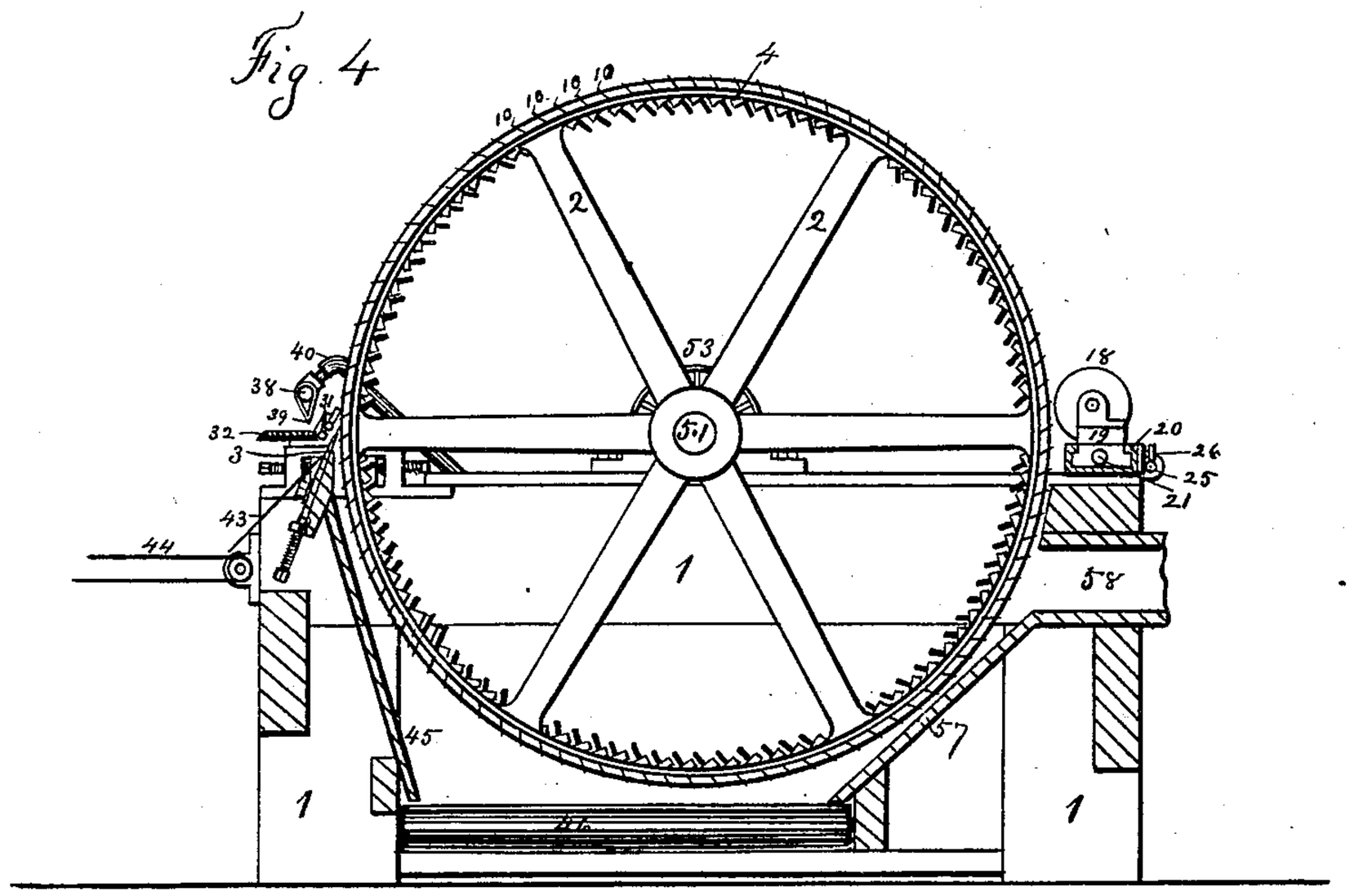


Fig. 4



WITNESSES

Samuel H. Fairchild

Benson T. Burr

INVENTOR

Chas E. Sackett

No. 674,472. Patented May 21, 1901.

C. E. SACKETT.

MACHINE FOR CUTTING FUR FROM PELTS.

(Application filed Apr. 27, 1900.)

(No Model.) 4 Sheets—Sheet 3.

Fig 6

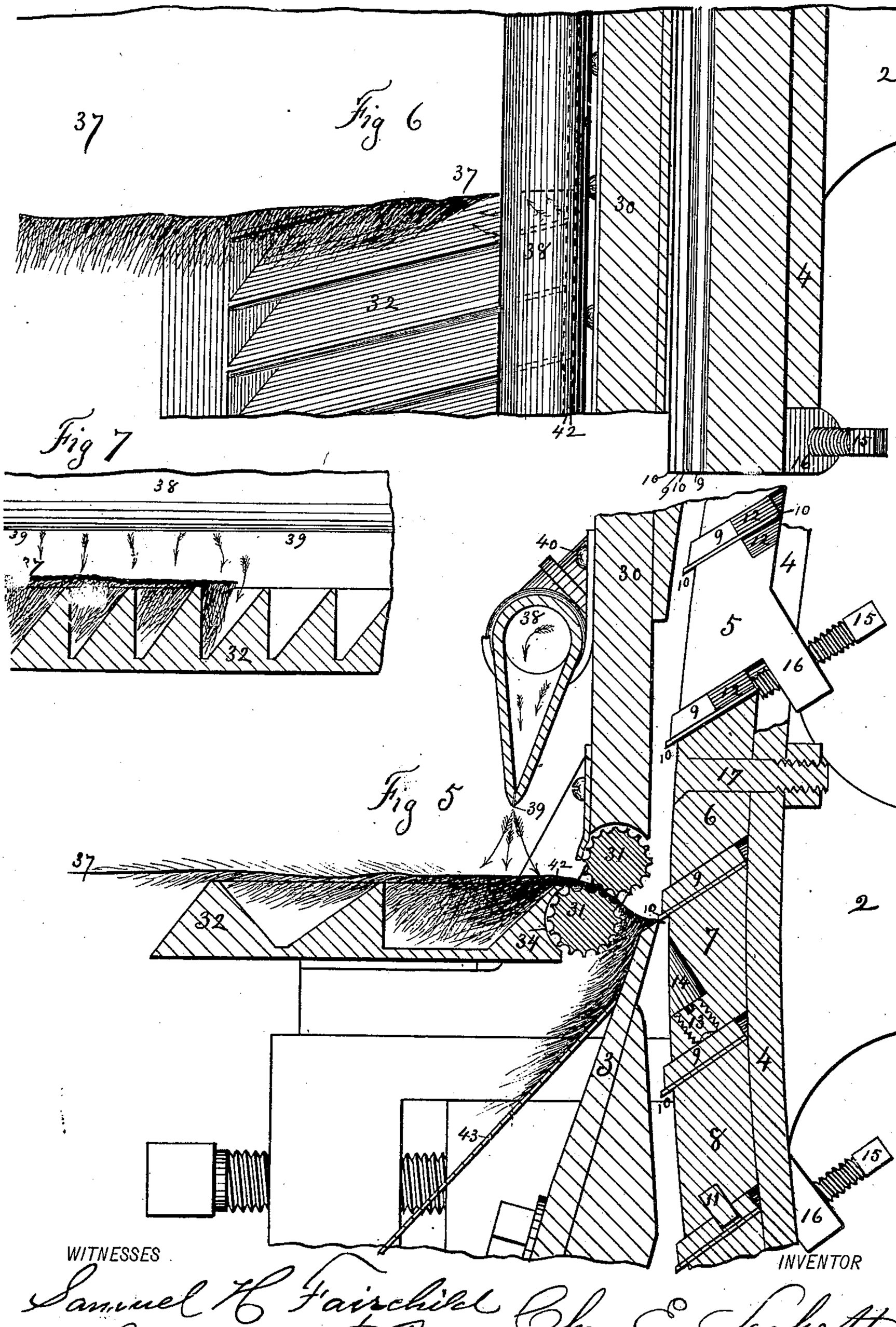


Fig 7

Fig 5

WITNESSES

Samuel H Fairchild
Benson S. Burr

INVENTOR

Chas E Sackett

No. 674,472. Patented May 21, 1901.

C. E. SACKETT.

MACHINE FOR CUTTING FUR FROM PELTS.

(Application filed Apr. 27, 1900.)

(No Model.) 4 Sheets—Sheet 4.

Fig 8

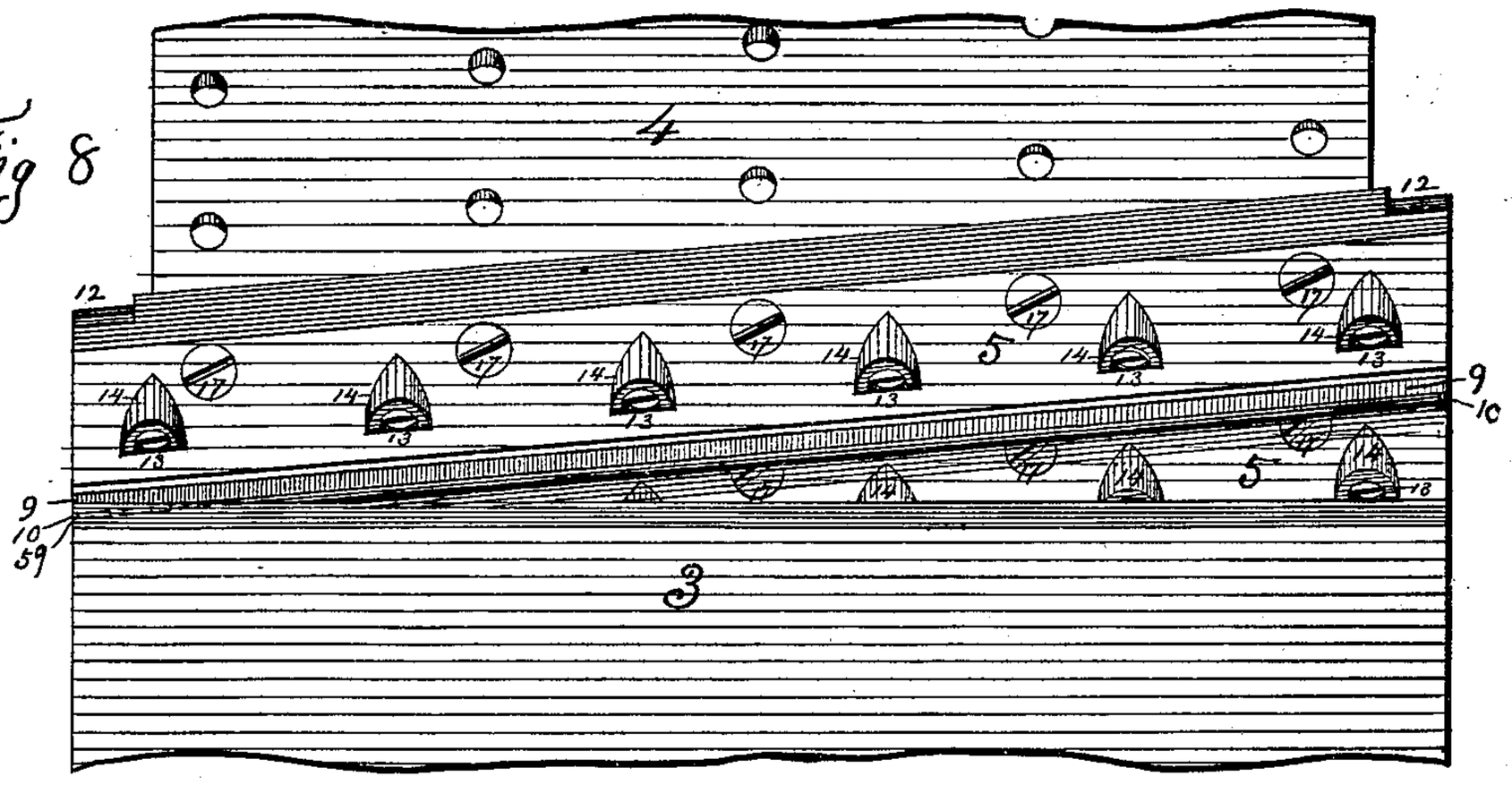


Fig 10

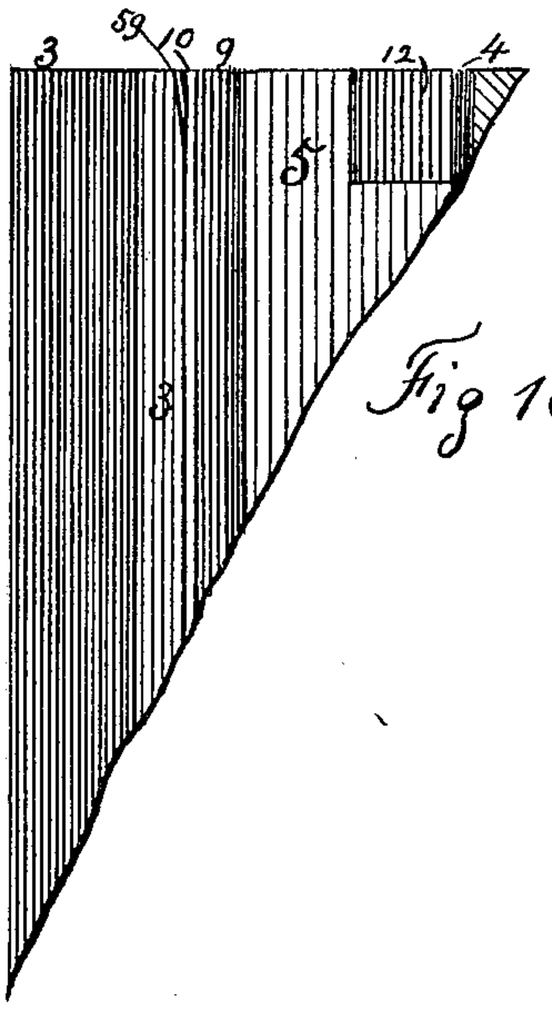
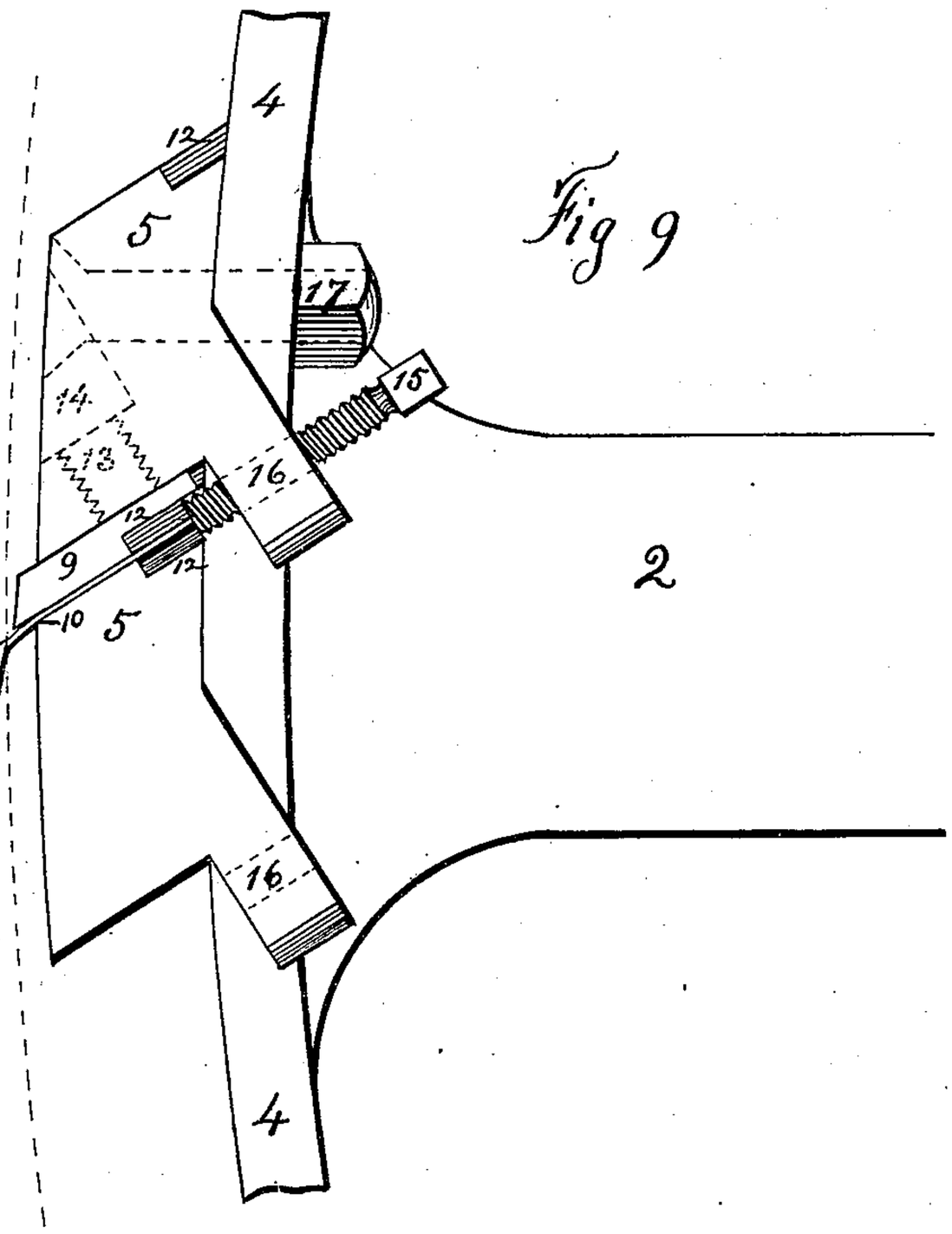


Fig 9



WITNESSES

Thos. D. Torney.

William. Dawes.

INVENTOR

Chas E Sackett

UNITED STATES PATENT OFFICE.

CHARLES E. SACKETT, OF DANBURY, CONNECTICUT, ASSIGNOR TO THE NEW ENGLAND FUR CO., OF FALL RIVER, MASSACHUSETTS.

MACHINE FOR CUTTING FUR FROM PELTS.

SPECIFICATION forming part of Letters Patent No. 674,472, dated May 21, 1901.

Application filed April 27, 1900. Serial No. 14,598. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SACKETT, a citizen of the United States, and a resident of Danbury, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Machines for Cutting Fur from Pelts, of which the following is a specification.

The machines now in general use combine substantially a frame, a cylinder having knives screwed to its periphery, and a bed-knife with which they contact. Cutting-machines as above have been in use many years. In foreign countries the cylinders are about three inches in diameter, carry three to four knives, and run at about three thousand revolutions per minute. In American practice the cylinders are about six inches in diameter, carry five to six knives, and are run at about fifteen hundred revolutions per minute. Thus each knife makes fifteen hundred cuts per minute, and the knives require to be reground every day. As a rule they are made of very hard steel and are ground on the under side. Therefore they must be unscrewed and are ground separately by hand or machine. In either case it is almost impossible to grind them separately so that they will again contact true to the bed-knife edge and uniform as to circle. The knives are made very heavy to stand the great pressure required between the bed-knife and cylinder-knives to force them into even contact. This pressure and the high speed of cylinder causes severe wear on the journals, boxes, and knives. The knives are usually made by welding a steel face to an iron back, and three-fourths of the width of the knife is lost in bedding it on the cylinder. When the one-fourth projecting beyond the cylinder is ground down, the knives must be thrown away. This projection is therefore made as great as possible and acts badly in two ways. It turns the cylinder at its high velocity into a species of fan, and much good fur is sucked into the indraft at the cutting edge and lost. As the knives are ground down the diameter of the cylinder is constantly changing and presents varying conditions to the rest of the mechanism, which also works badly.

The object of my invention is to overcome these and other defects in the present system and to supply other novel features, which will be hereinafter described.

In the drawings, Figure 1 is a side elevation. Fig. 2 is an opposite side elevation. Fig. 3 is a plan view. Fig. 4 is a section on the dotted line of the plan. Fig. 5 shows, on an enlarged scale, a section of the new elements of construction and the novel method of saving the edge fur on the pelts. Fig. 6 is a plan view of the same. Fig. 7 is a section of the same. Fig. 8 is a front view of the cylinder-lags and contacting knives on a larger scale. Fig. 9 is a side view of the same. Fig. 10 is a perpendicular view of the end portion of the knives at the beginning of contact.

In all the drawings like figures relate to like parts.

The radical change that my invention makes from established methods is to construct a cutting-cylinder of such enlarged diameter that I can place on its periphery preferably one hundred cutting edges instead of six. The object is to attain great peripheral speed with a slow-moving axis. At only one hundred and twenty revolutions this cylinder will make twenty-five per cent. more cuts per minute than a six-knife cylinder running fifteen hundred revolutions per minute; also, each knife of my enlarged cylinder only makes one hundred and twenty cuts per minute, whereas by the old system fifteen hundred cuts per minute are made. Consequently the knives of my cylinder will need to be ground only once in twelve days, as against every day by the old system, to keep the same relative cutting edge, thus saving greatly in labor and time.

In Figs. 3 and 4 the cylinder is shown in plan and section. 1 is the bed-frame. 2 is the cylinder bedded thereon; 3, the bed-knife. 10 is a series of knives projecting slightly beyond the cylinder-periphery. These knives are spiraled across the cylinder-face to give a shearing cut, as shown in Fig. 3. The details of construction of this cylinder as well as other novel features are best shown in the enlarged sectional drawings Figs. 5 to 7. Here 4 is the rim of the cylinder proper, which is a large well-balanced wheel, preferably double-spoked to prevent any vibration. On this rim is bolted a series of metal lags, four

of which are shown at 5 6 7 8, each showing a different detail of construction, but which is common to all the lags. They are placed at fixed distances apart, so as to leave recesses for the insertion of a knife-plate 9 and knife 10. They are curved on their under side to accurately fit the cylinder-rim and are turned on their outer side circumferentially true to the cylinder center. They are dressed at top and bottom to the pitch desired for the cutting-angle of the knives, for which these surfaces form the bed, and when bolted fast they become an integral part of the cylinder. They are constructed separately and then made fast as an easier method of accomplishing all the constructive details peculiar to them. The construction of the knives is also novel and a radical departure from established methods. The ordinary practice is to weld a thin face of steel to a thick supporting-back and to grind both away together when removed from the cylinder for that purpose. It is my object never to remove the knives and to reduce the grinding to a minimum. This I accomplish by making the supporting-back knife-plate 9 a permanency. In lag 8 it is shown held in position by the dowel-pins 11. This admits of a slight rise and fall when releasing the knife proper, but prevents any forward movement. It has a permanent projection beyond the lag or cylinder face that need never be over one-eighth of an inch, as the strip of pelt cut is rarely over one-twentieth of an inch. The knife proper is made of a thin sheet of steel 10, inserted under the knife-plate, and slides upon instead of being welded to it. It also has a very slight projection beyond the knife-plate, (one thirty-second of an inch is enough,) so that the support given to the cutting edge by the knife-backing may be as good as though it was welded to it. These dimensions of projection of both knife-plate and knife may be varied to suit circumstances, the object being to have the knife-plate project just enough to give the thin knife the necessary stiffness to resist the material being cut. To this end it is inserted under the knife-plate and is backed by it, yet, being parted, it is free to follow the curves of the bed-knife edge and always remain in contact with it.

Fur-cutting machines are mechanical scissors, but the two shearing-blades being disconnected lock the pivot, which acts as a spring to keep scissors-blades in contact. My thin steel knife is designed to supply this required elasticity of contact and will readily do so with sufficient projection. The present blades of fur-cutting machines being heavy and solid and ground separately, mostly by hand, the only way to line the edges and overcome hollows has been to force one blade to trim the other, to the detriment of both, and accidents often ensue. In Fig. 9 I show the elastic action of the thin cutting-blade exaggerated. The blade may range from one sixty-fourth to three sixty-fourths of an inch in thickness, preferably, so that any degree of spring is attainable. In Figs. 8 and 10 I show how this spring-like action is obtained. The entering end of the bed-knife, where the cut begins, is rounded or beveled back, as at 59. As the cylinder-knives descend their lower entering corner passes freely into this space behind the bed-knife. As the shear begins the thin knife 10 slides up this bevel and encounters the pressure of the bed-knife along its entire cutting edge, so that it necessarily follows its curves or hollows. The bed-knife is set by its regular push-screws to give just the pressure required, and thus avoid the great pressure that is ordinarily used. I describe the above as only one of the advantages to be derived from the use of my parted knives. The better plan is to use but very slight pressure and but little springing of the knives; but this can only be attained by grinding the cylinder-knives upon the machine in combination with and truly parallel with all the rectangular slides and bearings that act to hold the cutting edges in parallel relation and without removing any of them. I explain my method of doing this hereinafter, and for which the thin knife 10 is an absolute necessity. The knife and knife-plate are held firmly together and in position within the walls of the cylinder-recesses by the set-screws 13, placed at short intervals along lag 7 and recessed in the face of said lag by recesses 14. The knife proper is advanced for grinding as wear takes place by the push-screws 15, threaded into projecting ear-pieces 16 back of the ends of each lag, as shown in lag 5. These push-screws bear directly upon the back edge of the knives proper, preventing any reaction in grinding or cutting, and recesses 12 are left both in the ends of the lags and the ends of the knife-back plates for them to work in. In lag 6 I show the method of securing the lags to the cylinder by bolts 17, placed at short intervals along it.

In grinding the knives of this machine I also make a radical departure from established methods. It is usual to remove the knives from the cylinder, because they must be ground upon an underneath bevel, and owing to the fact that they are so thick and that the backing is welded to the steel the latter must be ground away as well as the steel. In my invention the backing is permanent and need never be ground. The thin steel knife sliding upon its face is pushed out by the push-screws just sufficient to true up its dulled edge. Being so thin and pitched at a proper angle outward, grinding upon a true circle gives the requisite cutting edge, which is about forty-five degrees, and a mechanism such as I show can be adapted for grinding. It is arranged upon the back of the machine and consists (see Figs. 3 and 4) of an emery-wheel 18, mounted upon a carriage 19, which is made to traverse the carriage-bed 20 by the screw 21, actuated by the handle 22. The

wheel is fed forward, so as to just touch the knives, by the handle 23, actuating the shaft 24, on which are worms 25, actuating the worm-wheels 26 in the head of the feed-screws 27, threaded into lugs on the traverse-bed 20, by which a very delicate adjustment can be at all times made. It is a great advantage of my invention that the grinding takes place with the cylinder in motion and everything undisturbed. In fact, if the knives are projected sufficiently sharpening of their edges may take place at any time during the actual cutting operation and as often as need be until they need setting out again. In practice the cutting-cylinder is completely covered by a cap 28. (Shown in Figs. 1 and 2.) This cap has small openings arranged at 29 and 30, which give access to the knives on either the cutting or grinding side of the cylinder.

The usual plan of feeding pelts to the cutting-knives is to insert the head of a pelt 37 between the feed-rolls 31. (Best shown in Fig. 5.) As the rolls draw the pelt in the operator tries to hold the skin flat, stretch out any wrinkles, and at the same time by slipping his forefinger along the edge to try and turn the edge fur, which surrounds every pelt, beneath it, so that as the rolls grip it it will be saved from the action of the knives, which unless it is beneath the pelt chop all the edge fur into bits; but this system is of little avail, for the edge fur springs out as soon as it is past the operator's finger and the movement of the pelt is rapid. In United States Patent No. 517,397, issued to me March 27, 1894, I provide a mechanism to automatically accomplish this purpose. In this invention I improve upon it by dispensing with all the auxiliary rolls there shown and adopting the novel method herein described. I use a similar feeding-plate 32 as there shown, having recesses and ridges arranged obliquely to the travel of the pelt from the center of the plate toward both its sides. I make this plate more convenient by arranging it to swivel upon a bolt 33, (see plan,) so it can be swung away from the feed-rolls when desired. By recessing the front of the plate at 34 so that the lower roll fits within its curve I prevent any fur from winding on the roll, as it has a tendency to do, the lower edge of the recess turning and cutting it loose. At the other end of the plate I use a retaining-pin 36 (see plan) to hold the plate in position up to the roll. Above this plate, which carries the pelt 37 always with fur side down, I arrange an air-receptacle 38, having a longitudinal thin orifice or other suitable vent 39. This I connect by the air-pipes 40 with a positive pressure-blower 41, which forces the air under pressure down upon the pelt, holding it flat upon the plate, so that with the feed-rolls drawing it in the operator is at liberty to be picking up another pelt; but the most important function of this air-blast is that it drives all the edge fur down into the recesses of the plate, as shown in Figs. 5 to 7. There the oblique ridges act to fold it under the pelt as it advances, while the final cross-ridge 42 forces it up under the pelt, where the rolls grip it, and the fur is all protected from the action of the knives. The strip of pelt cut off by each knife is less than one-sixteenth of an inch. This releases the roots of that much fur which passes down the slide 43 in a continuous sheet as the knives release it and is carried away upon a traveling apron 44. The pieces of cut pelt fall within the machine upon the slide 45. (See Fig. 4.) It is usual to remove them by hand; but I provide a traveling apron 46, which delivers the pelt without the machine or into any convenient receptacle automatically. This apron is arranged below the cylinder, as shown. It is actuated by the driving-roll 47, (see Fig. 2,) having a shaft 48 geared to the upright shaft 49, which is actuated from the feed-roll shaft 50. The feed-rolls are driven from the cylinder-shaft 51, which is actuated by the driven pulleys 52 from any convenient source of power. The cylinder-shaft also actuates the pressure-blower through pulley 53. When it is desired to grind the knives, a belt is arranged from the pulley 54 upon the shaft of the emery-wheel communicating with the overhead drum 55, which is driven by the pulley 56 from any convenient line of shafting.

A certain amount of waste fur is invariably sucked in by the indraft at the cutting-point and will descend with the pelt upon the apron 46. This is lifted by the peripheral action of the cylinder and is swept up the slide 57 (see Fig. 4) and blown through the opening 58 into any convenient receptacle.

Having thus described my invention, I desire to state that the cutting-cylinder is not of any fixed diameter or carries any fixed number of knives. The larger it can be conveniently made the greater will be its economy. I am aware that an enlarged diameter of cylinder or the great change I make in the ratio of peripheral speed to axial speed is not patentable; but what I claim, and desire to secure by Letters Patent, is each of the novel features which makes this enlarged construction of cylinder possible, as well as the other novel features peculiar to my invention as now set forth.

I claim—

1. In a machine for cutting fur from the pelt the combination of a bed-frame, a bed-knife, and a cylinder mounted on the frame having recesses arranged in the periphery thereof, crossing its face spirally and forming bearing-walls between which cutting-knives are closely inserted, means for creating a pressure upon the knives through said bearing-walls, and means for projecting said knives beyond the recess edges by push-screws bearing upon their back edge substantially as described and shown.

2. In a machine for cutting fur from the

pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame, lags bolted spirally and permanently upon the periphery of the cylinder, recesses arranged between the lag-walls, cutting-knives inserted in said recesses to contact with the bed-knife in a shearing cut, other recesses formed in the outward faces of said lags, and screw-holes tapped in the bottom of said recesses to receive set-screws which pass through the walls of said lags, and act upon the cutting-knives aforesaid to secure them in position by their pressure substantially as described and shown.

3. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame having recesses spaced in its periphery, and knife-backing plates permanently secured between the walls of said recess by dowel-pins inserted in one of said walls and upon which the backing-plates can rise or fall but which prevent their withdrawal substantially as described and shown.

4. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame having recesses spaced spirally across its periphery, knife-backing plates secured permanently in said recesses, and thin plates of steel or other suitable cutting material inserted between the said knife-backing plates and one of the recess-walls, the cutting edge thereof being always maintained slightly in advance of the backing-plates, and push-screws bearing on the back edge thereof which push-screws also serve to advance the cutting edge as wear takes place without removal of any of the parts in combination with set-screws acting through said recess-walls to secure said knife in position when advanced, substantially as described and shown.

5. In a fur-cutting machine the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame having recesses arranged spirally across its periphery, and knives inserted in said recesses between the walls thereof, their cutting edges projecting beyond them, the knives consisting of imperforate blades, means for projecting them as wear takes place from between said recess-walls, and means extending through said walls for securing them in position, substantially as described and shown.

6. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame, lags bolted spirally across the cylinder-periphery, having recesses in their outward face tapped for set-screws, recesses left between said lags forming walls between which cutting-knives are bedded, and a series of set-screws arranged in said outward recesses to be operated to act through said recess-walls to secure said knives in position without removing said knives or any of the operating parts substantially as described and shown.

7. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame, and metal lags bolted spirally and permanently across its surface leaving recesses between them, said lags being curved on their inner side to match its periphery, dressed on their outer side to a uniform thickness, recessed on their outer face to receive set-screws, acting through one of each of their walls, pitched on their edges to the requisite cutting angle, the said two edge faces forming recess-walls between which cutting-knives are bedded and means for adjusting and securing said knives between said recess-walls substantially as described and shown.

8. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame, metal lags secured to the cylinder-periphery, leaving recesses between them to form bearing-walls, knives inserted in each of said recesses, and an earpiece constructed on each end of said lags, outside of the cylinder edge and projecting below its periphery, said earpieces having faces at right angles with the pitch-faces of said lags and being provided with push-screws threaded through them, said push-screws being parallel with the pitch-face of said lags, and bearing upon the back edge of the cutting-knife which slides upon said pitch-face substantially as described and shown.

9. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame, lags bolted spirally across the cylinder-face forming recess-walls between them, cutting-knives made in two parts inserted between said walls, the thicker part of the knife constituting the backing-plate being secured within said recess-walls permanently by dowel-pins which permit of a slight rise and fall, but prevent any withdrawal of said backing-plate, and set-screws passing through the recess-walls arranged to be operated from the cylinder-face to set the backing-plate against the knife without the removal of any of the parts substantially as described and shown.

10. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cutting-cylinder having knives contacting with the bed-knife, feed-rolls for feeding the pelt to the knives, a feeding-table having recesses and ridges arranged obliquely to the travel of the pelt, and a swivel-joint arranged at one end of the feeding-table whereby it may swing outwardly and a catch arranged at the other end of the table for retaining it in position, substantially as described and shown.

11. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cutting-cylinder and a feeding-table arranged in front of the feed-rolls concaved at its end contiguous to the lower feed-roll to the same peripheral diameter as the feed-roll,

thus creating a hollow space into which the lower feed-roll is fitted to act as a seal between the wind above and the fur below, substantially as described and shown.

12. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cutting-cylinder with knives thereon, feed-rolls for feeding the pelt to the knives, a feeding-table having ridges and recesses over which the pelt passes, and an air-receptacle having an orifice arranged above the pelt and means for generating and leading the air under pressure into the receptacle, and directing it upon the pelt and the fur around its edges substantially as described and shown.

13. In a machine for cutting fur from the pelt, the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame having knives attached to its periphery, contacting with a bed-knife, feed-rolls for feeding a pelt to the knives and means for directing air-currents against the edges of the pelt as it advances between the feed-rolls, said air-currents acting upon the edge fur which extends beyond the pelt to turn it beneath it for the purpose set forth and substantially as described and shown.

14. In a fur-cutting machine the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame generating a wind-current by its revolutions and a receptacle for the cut pelt and waste fur closely surrounding the lower portion of the cylinder, consisting of sides extending from about its center to its lower circumference, a descending slide arranged in front of the cylinder from about its center to just below its lower circumference, meeting a traveling apron running horizontally just below it, an ascending slide arranged back of the cylinder extending from the apron upward nearly to the middle of the cylinder, the whole arranged to restrain the waste products within the action of the cylinder-current for separation purposes substantially as described and shown.

15. In a machine for cutting fur from the pelt provided with a bed-frame, a bed-knife, and a cylinder mounted on the frame having knives attached to its periphery, a mechanism for grinding the cylinder-knives consisting of a revolving emery-wheel, a traverse-carriage and transverse feed-screws for operating said carriage, the whole arranged upon the cylinder bed-frame in such rectangular construction as will cause the edge of the cylinder-knives to be ground without removal in true parallel relation to the bed-knife edge substantially as described and shown.

16. In a fur-cutting machine the combination of a bed-frame, a bed-knife, a cylinder mounted on the frame having knives attached to its periphery, and a grinding mechanism constructed upon the same bed-frame consisting of a revolving emery-wheel mounted on a traverse-carriage, a screw feeding said carriage transversely back and forth across the edges of said cylinder-knives, and a cross-feed mechanism arranged to feed said emery-wheel toward said cylinder-knives, the whole arranged to grind said knives circumferentially and transversely in true parallel relation with the cylinder-bearings without removal, and while in motion, substantially as described and shown.

17. In a machine for cutting fur from the pelt the combination of a bed-frame, a bed-knife, and a cylinder mounted on the frame having recesses spaced spirally across its periphery, said recesses containing knives having a narrow cutting projection beyond them, said knives being made in two parts, a thick backing non-cutting part, and a relatively thin cutting part projecting slightly beyond the backing, said parts being secured together and in position by set-screws entering from one recess-wall and clamping them against the opposite recess-wall, the whole arranged as to require no removal of the knives for adjustment or grinding until worn out substantially as described and shown.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 20th day of April. 1900.

CHAS. E. SACKETT.

Witnesses:
SAMUEL H. FAIRCHILD,
BRONSON S. BURR.