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Contents :

(Illustrated articles are marked with an asterisk.)

*Improved Truck Machine.....	63	Photographs.....	63
On Flying Machines.....	63	New Inventions.....	63
Miscellaneous Sanitary.....	64	The Markets.....	69
The Children of Mechanics.....	65	Notes and Queries.....	69
The Steam Engine Indicator.....	65	*Important Decision in Interference Case.....	69
Rifle Shooting.....	66	*Improved Car Coupling.....	70
An Immense Temple of the Muses.....	66	*Improved Piston Packing.....	70
Removing Hyposulphites.....	66	Are You Insured?.....	70
*Spaulding's Patent Broom-head.....	66	Red of Sorghum.....	70
The Queen's Portrait for Mr. Peabody.....	66	Importance of Rags.....	71
Strange Inconsistency.....	67	The Production of Timber.....	71
Sifted White Wash.....	67	The Needle Gun.....	71
Useful Recipes.....	67	Our Commercial Marine.....	71
Clay or Iron Gas Rotors.....	68	Water Supply of Philadelphia.....	71
Pressure in Boilers.....	68	Patent Claims.....	72, 73, 74, 75, 76, 77
Home-Made Aluminum.....	68	Advertisements.....	73, 76, 77
Questions for Millers.....	68	*Improved Oiler for Machinery.....	78
The European Squadron.....	68	*Improved Gas-Pipe Tongs.....	78
The Heated Term—How to Keep Cool.....	68	Resin in Collodion.....	78
		Patents in Canada.....	78

IMPORTANCE OF RAGS.

The wealth that is brought into existence by manufactures, or reproduced from apparently valueless substances by the marvelous, transforming power of human ingenuity, impelled by human wants, is a subject of surprise, even to the thoughtful observer. Enormous quantities of refuse matter are transformed into healthful fruits, grains, vegetables, and flowers, by the liberation of their gases and the dissolution of their salts. Bones, discarded by the housewife as useless, are wrought into forms of use and beauty, but in no instance is the value of articles which have outlived one condition of usefulness, and been submitted to the re-creative power of manufacture, more apparent than in the change which rags undergo.

From time immemorial rags have been the symbol of poverty, worthlessness, and vileness, and, as such, are referred to in the Bible and in the earliest profane works. Their usefulness as a material for paper seems, however, to have been discovered several centuries ago. The oldest specimen of paper made from linen rags contains a treaty of peace between the kings of Aragon and Spain, bearing the date of 1178. Raw cotton was, however, used for paper making before this time. It is tolerably certain that mills for making paper from rags were operated in Spain as early as 1085 (*vide* "Chronology of Paper and Paper Making," by J. Munsell.)

Rags, particularly cotton and linen rags, have been for many years one of the housewife's perquisites, and many a shining treasure in the kitchen and many an elegant teapot on the table, has borne witness to the thrift of the good woman in her practice of economical saving. All these rag-savings find their way to the paper mill. Their price has more than quadrupled since the diminution in the supply of cotton caused by the war. But the supply of this country is wholly inadequate to the demands of the manufacturers and the public. Once writing paper was not very generally used—at least, the people generally required but a small portion compared to the quantity they now demand. It might have been supposed that the increasing facilities of travel would have diminished the necessities for writing; but the contrary seems to be the case. Personal contact and mutual acquaintance beget new commercial alliances, and correspondence is necessary. The rags made in this country constitute but a small portion of those used by American manufacturers. We imported for the quarter of the present year ending June 30th,

rags to the value of \$426,766. In the ten years ending with 1865, the amount of rags imported was 209,883,718 pounds. Italy furnishes a large proportion of the rags brought into the United States. Everybody has heard of the Italian lazzaroni, who wear the scantiest dress of the filthiest rags; yet from this unpromising source nearly three-fourths of our supply comes.

Italy is the country of the open palm, and begging and rags go together. Begging there, and in other parts of southern Europe, is as much a profession as any industrial pursuit in this country, and the uniform of rags is more important to its successful prosecution than is the Government livery to the soldier. Still, valuable as rags are to the professional beggar, and important as they may be to abject poverty, they are far more important to the world at large; for up to the present time no other material has been found to usurp their place as the basis for paper. Their scarcity and constantly enhancing value have stimulated ingenuity to provide a substitute, but it has not been so successful as could have been wished. Straw, wood, and other substances have been, and are now, extensively used in the manufacture of the coarser papers, but nothing equals linen and cotton for the production of the firmer and finer qualities. Some of the European Governments, for this reason, have prohibited their exportation.

It is a little singular that advances in knowledge and refinement—the triumphs of intellect and the spread of intelligence—are so closely dependent upon the contributions of ignorance and poverty. Possibly the sheet upon which we are now writing, and the page that will bear to our thousands of readers these printed lines, were once the filthy rags that but half concealed the nakedness of a Neapolitan beggar or an Egyptian fellah. It is to be hoped that the transformation they have undergone is typical of the improvement which education and the arts are yet to work upon the meanest of the race.

THE PRODUCTION OF TIMBER.

Bayard Taylor, in a recent letter from Kansas, says that hundreds of acres of prairie, which have been protected from fires by contiguous cultivated fields, are overgrown with hickory and oak trees from four to six feet high. Where land is tolerably well watered and undisturbed, especially if in vicinity of wooded country, it will give support to what is commonly called a spontaneous growth of timber. The character of the growth depends mainly upon the quality of the soil. The seed may have remained for years in the soil, possessing a latent vitality, which awaits only favorable conditions for its development. Poor soils seem first to favor the pine, and this in turn gives place to the more rapid-growing deciduous trees, until the chestnut and the oak find fitting support and conditions for their growth and development. But in a country like this, where the demand for timber for manufacturing and building purposes threatens to rob us of our forests, it may not be well to rely wholly upon the unaided forces of nature for a supply. The resolution introduced into Congress to offer incentives to the planting of our immense prairies with trees, we regard as a timely suggestion. The great drawback to the settlement of those vast fertile plains is the absence of wood and an unfailling supply of water. These secured, and our prairies will be selected in preference to localities less favorable to agricultural pursuits, but which furnish wood and water in profusion.

Wherever there are forests there will be water, and the last is an indispensable requisite to human habitation. A section of country unprovided with elevated points as gatherers of the moisture of the clouds, must have a clothing of forest to retain the rains, which, on a naked plain, alternate periods of extreme drought with seasons of superabundant moisture.

THE NEEDLE GUN.

So much has been said about the Prussian needle gun of late, in the foreign journals, and the success of the Prussians with it, that many suppose it to be a new invention. On the contrary, it is twenty years old. We do not desire to depreciate it on this ground, but judging it solely by its intrinsic merit, it

is not up to the standard of American breech loaders. All military men know that an essential point in a firearm is simplicity and certainty in fire. Neither of these qualities is found in the needle gun, for the mechanism is clumsy compared with recent inventions, and the ammunition is complicated, and costly to prepare. The principal idea in this weapon is in firing the charge from the front instead of behind, as in other weapons. To do this the percussion powder is put into a cavity in the base of a paper sabot, between the ball and the powder, the charge being exploded by a wire or needle thrust through the cartridge.

The experience gained in the war of the rebellion shows us that the "magazine arm," or that weapon where the charges are contained in the breech, is most deadly, when in the hands of skillful troops. Other breech loaders have their good qualities, but all who remember the part the Spencer rifle bore in the contest will concede the point we make.

Breech loaders have this disadvantage: troops must be trained long and thoroughly, or in the heat of battle the charges will be thrown away from heedless firing. The Prussian army have had experience with breech-loading guns for fifteen years, and in their recent battles did well. We published an engraving of this gun on page 124, Vol. 5, Old Series, SCIENTIFIC AMERICAN, to which we refer our readers. This was in 1850, nearly 17 years ago.

OUR COMMERCIAL MARINE.

The depredations inflicted on our commerce during the war were so serious as to create a fear that many years of peace would be required for its recovery. Indeed, when the devastations of war in our own borders were taken into account, the prospect was very disheartening. In 1856 seventy per cent of our foreign commerce was carried in American bottoms, while, in 1865, only about twenty per cent was under our flag. To be sure this enormous falling off was not occasioned by the destruction of American vessels, but was caused by the sale and transfer of our ships to foreign merchants, in order to obtain the protection of European flags which our own could not accord.

It is evident, however, that already we are rapidly assuming the position we occupied as a commercial nation before the war. Several causes combine to assist this recuperation. The abundance of material for ship building, our extended coast line, the fisheries with their thousands of hardy mariners, and the immense traffic of our seaports, sending away the surplus products of our vast interior, with which they are connected by navigable rivers and iron roads, and bringing in the manufactures of Europe, all direct a large portion of our enterprising energy into the channels of commerce.

The breaking out of a war in central and southern Europe, which threatens to involve every continental nation, and possibly England, will create additional demands upon our commerce. We must assist in feeding their immense armies and in supplying the places of the hundreds of thousands who are drawn from the pursuits of peace. Our shipyards, our wharves, our seaports, and the country at large, will feel the stimulus this state of affairs engenders. Too far removed from the scene of strife to be involved in its complications, our commercial connection with the nations of Europe will affect our industrial interests, in one respect at least, favorably.

Water Supply for Philadelphia.

The water works of Philadelphia have been for years a great curiosity to strangers, Fairmount has been one of the "lions" of Philadelphia. The reservoir, with its accompanying machinery for elevating and distributing the water of the Schuylkill, has been considered a monument of engineering skill and successful endeavor. It is found out, however, that the growing requirements of the city demand a new or at least an additional supply of water. Mr. Birkenbine, the Chief Engineer, proposes to obtain a supply of water from Perkiomen Creek, and form a lake or reservoir of supply, in Montgomery county, nearly 27 miles from the city, and to conduct the water through an aqueduct to some high point within or near the limits of the city, on which a distributing reservoir shall be constructed. This, it is thought, will give a head of 75 feet above

that of Fairmount, and the estimated expense is about \$10,000,000.



ISSUED FROM THE U. S. PATENT OFFICE
FOR THE WEEK ENDING JULY 17, 1866.

Reported Officially for the Scientific American.

Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors may be had gratis by addressing MUNN & Co., Publishers of the SCIENTIFIC AMERICAN, New York.

56,343.—EVAPORATING AND DISTILLING LIQUIDS.—James Adair and H. W. C. Tweddle, Pittsburgh, Pa.

We claim the mode of distilling or evaporating petroleum or other liquids by passing through or over the liquid to be distilled or evaporated, heated carbonic oxide or carbonic acid, substantially as and for the purposes described.

Second, The combination of the air-tight furnace through the fire in which air and steam or either of them are forced, with the still or boiler for holding the liquid to be distilled or evaporated, and the pipes connecting the furnace and still or boiler, constructed and operating substantially as and for the purposes hereinbefore described.

Third, The air-tight furnace, A, constructed substantially as described for the production of carbonic oxide or carbonic acid, to be used in the manner of artificial combinations or mixtures of carbon with other fluid or solid bodies.

56,344.—CULTIVATOR.—Isaac Avery of Ottawa, Ill.

I claim, First, The attaching of the plow beams, A*, to pendants, a*, of the cross bar, C, by means of universal joints, D D', substantially as and for the purpose specified.

Second, The combination of the plow beams, A*, universal joints, D D', double-tree or evener, C, trace chains, E, and pulleys, e*, all arranged to operate in the manner substantially as and for the purpose herein set forth.

56,345.—EXTENSION IN CORSET SPRING.—S. H. Barnes, New York City.

I claim a corset spring, consisting of the parts, B, provided with pins, b, and slotted springs, B2, riveted as shown and having suitable clasps, C, and headed rivets, D, and of form corresponding to the body of the wearer, all constructed and operating in the manner and for the purpose herein represented and described.

56,346.—ANVIL AND VISE COMBINED.—J. D. Barton, F. S. Rogers and D. Fisher, Kalamazoo, Mich.

We claim the upright shaft, B, and levers, C and E, in combination with the several anvil appliances constructed and arranged substantially as described.

56,347.—SASH FASTENING.—Burroughs Beach, West Meriden, Conn.

I claim a sash supporter, consisting of the arms, A, in combination with the lever plate, K, and springs, E, when arranged together so that the said plate will act upon the said arms, substantially as described and for the purpose specified.

56,348.—GRAIN DRIER.—H. H. Beach, Rome, N. Y.

I claim, First, The within described grain drier, composed of the inclined perforated plates, B B' etc., and flues, G and H, the whole being arranged substantially as and for the purpose herein set forth.

Second, In combination with the above, I claim the vanes, x x', etc., arranged substantially as specified.

56,349.—BOTTLE STOPPER.—Josiah Beard and Moses Fairbanks, Boston, Mass.

We claim a protecting cap in combination with the stopper and fastening wire, passing through both the said cap and stopper as described.

56,350.—PLOW.—Charles Beidler, Allentown P. O., Pa.

I claim the segmental guide bracket, b, in combination with the screw rod, g, set nuts, i, handles, C C', and beam, A, and operating in the manner and for the purpose substantially as herein shown and described.

56,351.—MARINE CAR.—A. Blomquist, New York City, and C. Crook, Yonkers, N. Y.

We claim the arrangement of the drums, B B C, and paddle, D, in combination with the platform, A, constructed and operating in the manner and for the purpose herein specified.

56,352.—WATER DRAWER.—S. R. Boardman, New York City.

I claim, First, A well bucket, having three or more valves in the bottom thereof, and arranged at equal distances from each other, each valve being provided with a stem so arranged and operated that the ascent of the bucket will open those and those only that are upon that side of the bucket presented to the curb spout, as and for the purpose specified.

Second, In combination with a series of valves arranged around the bottom of the bucket as described, I claim a corresponding number of spouts attached to the bottom of the bucket, as and for the purpose set forth.

56,353.—PLASTER.—M. C. Bogiea, and H. B. Taylor, Philadelphia, Pa.

We claim a plaster consisting of mustard or other material or composition, permanently combined between layers of textile or other fabric, substantially as and for the purpose described.

56,354.—MECHANICAL MOVEMENT.—William Brant, Paris, Ill.

I claim the mode of imparting a reciprocating and alternate rotary movement to the shaft, G, by means of pulley, D, and thong, E, or devices substantially equivalent, all arranged to operate in the manner and for the purpose set forth.

56,355.—WELL PIPE OR TUBES.—S. Brewer and W. W. Winter, Cortlandville, N. Y.

We claim the device consisting of the springs, B B B, the shield, A, and the rod, D, all in combination, as and for the purposes herein shown and described.

56,356.—APPARATUS FOR PREPARING STARCH, SIZE, ETC.—John Briggs, Roxbury, Mass.

I claim in combination with stirrers, the tank, d, and foraminous cylinder, e, all operating together for the purpose set forth. Also the steam jacketed pipe, s, when provided with the screw, o and arranged to operate substantially as described.

56,357.—BEER FAUCET.—Charles Brown and C. McGhie, Chicago, Ill.

We claim the plunger, B, provided with the hollow stem, C,

having the holes, c, c' and c, therein as shown, in combination with the stem, D, having the spiral grooves, d, cut therein, when said parts are arranged to operate in connection with the body of the faucet, as and for the purpose set forth.

56,358.—TOY SLED.—John H. Brown, New York City.

I claim the combination of the button, G, rods, e f, and rudder, E, arranged with the horse, D, and sled, A, and operating in the manner and for the purpose herein specified.

56,359.—HORSE HAY FORK.—J. S. Brown, Washington, D. C.

I claim the employment of movable bars, D D, to cover and uncover fixed bars or shoulders, C C, substantially as and for the purposes herein specified.

I also claim a divided shaft, A, to be opened in dovetail or inverted wedge form, and closed in connection with the uncovering and covering of the bars, by movable bars, D D, substantially as and for the purposes herein set forth.

56,360.—CLOTHES DRIER.—O. C. Brown, Iberia, Ohio.

First, I claim broadly a clothes drying rack consisting of a series of supporting rods, bars or equivalents, attached to a flexible support to adapt the rack, as a whole, to be wound upon an axis or windlass, in any manner substantially as described.

Second, I claim a flexible clothes rack consisting of the straps, C C', blocks, D D', and supporting bars, F, all combined and operating substantially as described.

I also claim, in combination with the above I claim the frames, A A', and windlass, z, arranged and operating substantially as described.

56,361.—LAMP BRACKET.—T. W. Brown, New York City.

I claim the improved socket plate made with the recess and its openings and the semicircular bearing arranged with the projection of such plate, substantially as specified.

I also claim the application of the reflector supporter, d, to the socket plate, B, instead of applying it to the ring arm in the usual manner, the same presenting advantages in the casting of the ring and its arm.

56,362.—HORSE POWER.—H. L. & J. A. Buckwalter, Kimberton, Pa.

First, We claim, in the construction of horse power, the combination in one wheel of the sprockets which engage the shafts of the chain and the cogs which communicate motion to the counter shaft, substantially as described.

Second, We claim, in horse power placing two counter shafts in gear with the cog wheels of the machine, one within and one without their rims, in combination with the belt wheel, the same being so made and arranged that the belt wheel may be changed from the one to the other at the pleasure of the operator, substantially as described.

56,363.—ROOFING CEMENT.—M. Buell, Truxton, N. Y.

I claim, as a new article of manufacture and sale, the paint or composition which I have herein described.

56,364.—COFFIN.—John Burns (assignor to himself and Joseph W. Baker), Providence, R. I.

I claim, combining with a wooden coffin of the usual construction, a lid of marble or other equivalent material, substantially as described for the purpose specified.

56,365.—CRIMPING MACHINE.—G. Cabell, Quincy, Ill.

First, I claim the combination and arrangement of an iron, F, in one or each of the hollow fluted cylinders, A, substantially in the manner and for the purpose as herein set forth.

Second, The sliding pivoted cap plates, G, as arranged in combination with the fluted cylinders and iron, substantially in the manner and for the purpose as herein set forth.

Third, The slotted curved spring, B, screw rod, C, projecting arm, D, and grooved collar as arranged in their connection with the up per fluted cylinder and vertical tongued bars, b, and operating substantially in the manner and for the purpose as herein set forth.

56,366.—POTATO DIGGER.—F. Caldwell, Oxford, Me.

First, I claim the combination and arrangement of the geared wheels, d and c, shaft, e, eccentric, f, and connecting rod, n, as and for the purposes herein described, the said wheel, c, shaft, e, eccentric, f, and the sifter, s, being attached, as set forth, to the tilting frame, F, and the shaft, e, being also employed to give motion to the endless apron, k.

Second, The combination and arrangement of the arms, g, h, and helical spring, i, to hold the sifter, as described.

Third, The arrangement of the tilting frame, F, upon the shaft, E, for the purpose herein set forth and described.

56,367.—TEAPOT.—Robert Carter, San Francisco, Cal.

First, I claim the bottom, n, n, figure 2, of the inner case, H, figure 2, being formed convex toward E, figures 1 and 2, the bottom of the outer case, D, figures 1 and 2, for preventing the violent ebullition of the water contained in K, figure 2, when boiling, as would ensue if the bottom of H, figure 2, was flat.

Second, And without confining myself to any particular shape, size, or material, I claim as mine the general combination of the two cases, with their surroundings and appurtenances, as in this specification show n, for the purposes described and in the manner substantially herein set forth.

56,368.—IMPLEMENT FOR OPENING SHEET METAL CANS.—Seth P. Chapin, Atlantic, N. J.

I claim the cutter, B, curved in its cross section and provided with sloping cutting edges a' or a2 as described, when secured upon a handle or stock provided with a shoulder, d, to operate substantially as herein set forth for the purpose specified.

56,369.—SKATE.—E. G. Chormann, Philadelphia, Pa.

First, I claim the combination of the plate, A, and its runner, C, the plate, A', and its runner, C', and the screw, B, and sliding block, e, or equivalent device whereby the runners may be adjusted at any required distance from each other, the whole being constructed and arranged substantially as described.

Second, The combination, substantially as illustrated in figure 4, of the adjustable plates, A A', with the rollers for the purpose described.

56,370.—MACHINE FOR SHELLING PEAS.—George Clark, Jr., Boston, Mass.

I claim the combination of rotating rollers, face plate and screw clamp, whether with or without the scraper, for the purpose of expressing peas and other seeds from their containing vessels when the same are constructed and used substantially as described.

56,371.—CAR COUPLING.—D. Clinton, Peoria, Ill.

I claim the combination of the oblique face block, B, spring, c, and ends, b, of the latter serving as a stop for the ends of the spring, and constructed and arranged to operate together in the manner and for the purposes herein specified.

56,372.—CORDAGE MACHINE.—Charles Cobb, Plymouth, Mass.

I claim the combination and arrangement of the self-adjusting guide with the layer arm and the notch thereof, such guide being to operate with the laying drum substantially as set forth.

56,373.—SPRING BED BOTTOM.—Alexander Cole, Lockport, N. Y.

I claim the combination of the slats, C C, hangers, E, guide rods, c, c, coiled springs, s, s, and stops or cross pieces, H H', the whole arranged and operating substantially in the manner and for the purpose set forth.

56,374.—CHURN DASHER.—E. G. Connelly, Jasper, Ind.

I claim the construction of the dasher, C and C', with the valves, g and g', with either a double or single dasher, operating in the

manner and for the purpose substantially as set forth in the above specifications.

56,375.—HORSE HAY FORK.—A. J. Cooley, Char-don, Ohio.

First, I claim the arrangement of the arms, C, shanks, A A', and links, a, with the catch, F, spring, d, and notch, c, as and for the purpose substantially as set forth.

Second, The hooks, B B', with the connecting ropes or chains in combination with the loops, G G', shanks, A A', and bands, D, substantially as and for the purpose set forth.

56,376.—INVALID BEDSTEAD.—Henry Cordes, Bell-ville, N. J.

I claim an invalid bed formed by combining the pipes, B and G, the plates, E C D and I, the sheet, F, valve, G, and spring, L, with each other, and with the bed or mattress, substantially as described and for the purpose set forth.

56,377.—TOOL HOLDER.—Francis T. Cordis, Long-meadow, Mass.

I claim as a new article of manufacture, the holder, constructed substantially in the manner herein set forth.

56,378.—APPARATUS FOR TREATING ORES.—J. C. Coult and J. Roach, San Francisco, Cal.

First, We claim the pipe, C, connecting with a furnace, and having a wide opening entering the condenser, E, thereby imparting a greater distribution of the fumes as they enter said condenser, or water tank, and equally spreading the fumes over the water, substantially as described and for the purposes set forth.

Second, We claim the tank, E, with an inclined bottom, and the partitions, b b, in the inverted tank or cover of the same, and the adjusting screws, F F, attached thereto, substantially as described and for the purpose set forth.

Third, We claim the perforated diaphragm, G, having sufficient openings to equal the opening of pipe, C, where it enters the condenser, E, as before stated, likewise the water bottom, G' and G", over which the fumes collect and are drawn into a fan or pump; also giving a water bottom, H, to the fan or pump, thereby bringing the fumes again in contact with the water for a long distance, and extracting all that it may be desirable to collect before allowing an escape into the chimney, substantially as described and for the purposes set forth.

56,379.—STOVEPIPE DAMPER.—B. F. Cowan, New York City.

First, I claim the rotating spheroidal valve damper above shown, constructed and operating substantially as described.

Second, I also claim the rotating damper above shown in combination with openings in both sides of that part of the pipe within which the damper revolves, substantially as described.

56,380.—PUMP FOR DEEP WELLS.—Benjamin Crawford, Allegheny, Pa.

First, I claim the detached rod, t, in combination with the lower valve, q, for the purpose of keeping the lower valve closed on the down stroke of the piston.

Second, The combination and arrangement of the lever, y, and valve rod, t, with the cam, a', and pendant, d', for raising and lowering the valve rod, t, to relieve the lower valve, q, of its pressure when the up-stroke begins, and hold it down on the commencement of the down stroke, substantially as described.

Third, The combination of the check valve, h, and g, as pipe, i, e, with the working valve of a pump, constructed and arranged substantially as and for the purposes hereinbefore described.

Fourth, In its arrangement with the devices described in the third claim, the trap, c, in the flow pipe to prevent the passage of gas in that direction, substantially as described.

56,381.—WOVEN FABRIC.—George Crompton, Worcester, Mass.

I claim a textile fabric, woven with braided threads, substantially as described.

56,382.—EGG BEATER.—Joshua Davis, Schenectady, N. Y.

First, I claim an eccentric beater in combination with a revolving pan or vessel, substantially as and for the purpose set forth.

Second, The three bevel wheels, B C E, of differing diameters, one of which is adapted for carrying a pan or vessel, in combination with a revolving eccentrically-arranged stirrer or beater, substantially as described.

56,383.—SYSTEM OF CUTTING DRESSES.—Catharine Dittenhafer, Canton, Ohio.

I claim the within described patterns and system of cutting ladies' and children's dresses, saques, and basques, when used in the manner substantially as herein specified.

56,384.—SLIDE VALVE.—John B. Dougherty, Rochester, N. Y.

First, I claim the arrangement of the exhaust port, e, inlet ports, a a and m, in combination with the rollers, r r, and the steam pipe, p, which combination and arrangement avoids the necessity of a relieving or balance plate.

Second, The combination of the rollers, r r, in slide valves, with the shafts, f, when the same are used without a steam chest, as and for the purposes shown and described.

56,385.—SLIDE VALVE.—John B. Dougherty, Rochester, N. Y.

I claim the arrangement of the ports, c and e, in combination with one or more ports through the relieving plate, P, and the exhaust port, a, substantially as and for the purposes set forth, when the valve is used without a steam chest.

56,386.—ELEVATOR BUCKET.—Henry Dover and James Storms, Buffalo, N. Y.

We claim an elevator bucket constructed as herein described.

56,387.—PUMP.—Samuel S. Durbon, Lebanon, Ind.

I claim the tubular valve seats, 6, 6, the spindle gum valves, 7, 7, the self-adjusting leverage, 13, with valves, 15 15, the self-adjusting gum piston, composed of 1 2 and 3, and the elliptic, L, with the eccentric, L', all arranged and operating substantially as and for the purpose set forth.

56,388.—FLASK FOR CASTING STEEL INGOTS.—Zobeth Sherman Durfee, Pittsburgh, Pa.

I claim as my invention the mode of casting ingots of steel or other metals, by pouring or tapping such metal upon a piston, in a mold so arranged and constructed that, as the metal is continuously introduced, the piston may be caused or permitted as continuously to descend and be followed by the metal, while at the same time, the metal already poured, or the greater part thereof, remains at the same, or nearly the same height in the mold, that portion successively being introduced flowing through that already poured, and folding outward against the surface of the mold, at or near the surface of the piston as the piston gradually descends in the mold.

56,389.—HARVESTING MACHINE.—Rufus Dutton, New York City.

I claim the construction and arrangement of the track-board cap, D, in combination with the grass shoe and its projecting spur, a, and the track board and its spur, c, the whole arranged and operating substantially as and for the purposes set forth.

56,390.—FRUIT CAN.—B. F. Ells, Dayton, Ohio.

I claim the flanged top, A, provided with sealing wax, as set forth, and used with the can, B, in the manner and for the purpose described, whereby a can is formed which, when filled with fruit, will seal itself, substantially as specified.

56,391.—BOOTS AND SHOES.—Martin E. Ethridge, Lock Mills, Me.

I claim the combination, as well as the arrangement, of the two welts, a, b, with the insole, B, the upper, and the outer sole, D.

I also claim the combination and arrangement of the metallic cap sole, E, with the wooden outer sole, D, the two welts, a, b, the insole, B, and the upper, A, arranged and applied together, substantially as set forth.

I also claim the arrangement and combination of the cushion, C, with the insole, B, outer sole, D, and the upper, A, disposed together, substantially as set forth.

I also claim the combination of the perforated cap sole, E, and the gutta-percha sole, E', or its equivalent, applied to the wooden outer sole, D, as set forth.